ABSTRACTS

HHME16-04
WEARABLE REAL-TIME PULSE SIGNAL ACQUISITION FOR EVALUATION OF PHARMACEUTICAL THERAPY EFFECT ON CARDIOVASCULAR DISEASES

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Objectives: Cardiovascular disease is one of main diseases threatening human’s health. The cardiovascular condition of patient reflects pharmaceutical therapy effect. Pulse signal is closely related to the cardiovascular condition. It can be used to evaluate pharmaceutical therapy effect. The real-time pulse signal acquisition is necessary for this research. The aim of this study is to develop a wearable real-time pulse signal recorder for the evaluation of pharmaceutical therapy effect on cardiovascular diseases.

Methods: A wearable real-time pulse waveform signal acquisition system was built for the evaluation of pharmaceutical therapy effect on cardiovascular diseases. The hardware system and the application software were designed. The system contained a pulse detection sensor, a microcontroller unit (MCU), a bluetooth module, a mobile device and an application software running on the mobile device. The real-time pulse signal was collected by the pulse sensor and sent to the MCU. The MCU digitalized the pulse signal and sent the data through the serial port to the bluetooth module. The mobile device received the data via the bluetooth communication from the above buletooth module. An application was developed and run on the mobile device to display and save the real-time pulse waveform signal on the local storage. The pulse signal can also be sent to and saved on the remote cloud platform as long as the mobile device can connect the internet.

Results: The designed system was tested on a M355 mobile phone. It was shown that this system could acquire the real-time pulse waveform signal in the time domain as well as the Fourier spectrum provided in the frequency domain in the application software.

Conclusions: The experimental result confirms that the designed system could be considered as a long-term pulse waveform signal recorder. The pulse signal is associated with the cardiovascular condition. Therefore, the designed system could be used for the evaluation of pharmaceutical therapy effect on cardiovascular diseases.

Acknowledgements: Supported by project grants from the six talent projects with those determined via conventional blood analysis approaches, and found these two group data are close. Hence, these comparison results testified the feasibility of LIBS nail analysis as an effective approach for determination of Ca content in human body.

HHME16-05
DETERMINATION OF CALCIUM CONTENT IN HUMAN BODY WITH LASER-INDUCED BREAKDOWN SPECTROSCOPY

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Objectives: Calcium content in human body is of importance for their health. Traditional determination approaches of calcium content need to draw blood for tests. These approaches are thus inconvenient and have potential risks of being infected. This paper provides a spectroscopic approach for determination of calcium content in human body with laser-induced breakdown spectroscopy (LIBS) of human nails.

Methods: Human nails samples of 40 people collected with their full consent. These samples were then processed to the same shape and size for convenient comparison. A LIBS system was built. The system consists of a 366 nm ultra-violet pulsed laser, a customized laser focusing and LIBS signal receiving optical module, and a spectrometer ranging from 200-850 nm with a spectral resolution 0.1 nm, used to analyze the LIBS spectroscopic signals. All the LIBS spectra data of different nail samples were analyzed for determination of calcium content.

Results: LIBS spectra of 40 nail samples were obtained. The representative LIBS spectral lines of Ca element include 211.276 nm, 317.933 nm, and 422.673 nm. A multi-spectral weighted analysis (MWA) algorithm was adopted to reduce the chemical matrix effect of LIBS. Then Ca contents of 40 people were determined after MWA processing.

Conclusions: The LIBS quantitative analysis results show that 40 people have a little difference in Ca contents. We compared the Ca contents with those determined via conventional blood analysis approaches, and found these two group data are close. Hence, these comparison results testified the feasibility of LIBS nail analysis as an effective approach for determination of Ca content in human body.

Acknowledgements: Supported by National High Technology Research and Development Program of China (Grant No.2015AA0 21103), Chinese Natural Science Fund (Grant Nos.81260225 and 51428302).

HHME16-06
EFFECT OF BEAM HARDENING ON THE CT SYSTEM’S IN-PLANE SPATIAL RESOLUTION

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Objectives: Due to x-ray beam polychromaticity and the energy-dependent property of linear attenuation coefficient, first order or higher order beam hardening artifacts become visible in the reconstructed CT images. Thus, the inaccuracy of the in-plane spatial resolution needs to be estimated, which is influenced by beam hardening in the measurement of CT system.

Methods: Modulation Transfer Function (MTF) of the scanned small pin images is calculated based on the indirect measurement method with a special digital filter function. The scanned small pin images are reconstructed with different thickness and kernels from the original sinograms, the latter are acquired from more than two 16-row spiral CT with the same specification. The difference of the scanned small pin images can be obtained by comparing the 0%, 2%, 10%, 50% MTF values, which are observed before and after beam hardening calibration, and the effect tendency of beam hardening is represent by the MTF values.

Results: There are different MTF values in a CT system whether or not performing beam hardening calibration. When using different thickness and kernels to reconstruct small pin images, the measurement of in-plane spatial resolution shows different precision class due to the beam hardening.

Conclusions: The beam hardening effect has direct influence on the measurement of CT system’s in-plane spatial resolution, and the performance of the CT system can be estimated by using the analysis of the beam hardening calibration.
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HHME16-09
INVESTIGATION ON CURRENT STATUS OF COMMUNITY NURSES’ COGNITION ON MOVING CARE IN CHANGCHUN
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Objectives: To investigate current status of community nurses’ cognition on moving care and its influencing factors in Changchun, and provide references for improving the quality of community nursing service.

Methods: By using the method of random cluster sampling, choosing 290 community nurses in Changchun with a questionnaire survey. The questionnaires include general information and moving service cognition questionnaire. It includes 23 questions, each question was scored 1 point with correct answer. The more the score, the higher level of cognition.

Result: The average score was 14.68 ± 3.823, the influencing factors were technical title, educational level and personality successively. The higher rank of technical title, the higher level of cognition(F = 10.532, p < 0.05); the higher educational level, the better status of cognition(F = 8.578, p < 0.05); the level of community nurses’ cognition with A-type personality was higher than others(F = 8.016, p <0.05).

Conclusion: Current status of community nurses’ cognition on moving care in Changchun was at a moderate level. Managers should pay attention to community nurses with lower rank of technical title, lower educational level and non-A-type personality, carry out moving care cognition training activities actively. So as to improve community nurses’ cognitive level of moving care in Changchun, and the quality of community nursing service.

HHME16-11
ANALYSIS OF CLINICAL CHARACTERISTICS OF CHRONIC SKIN ULCER MODEL
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Objective: By analysing the corresponding animal model based on The clinical symptoms of chronic skin ulcer to put forward the corresponding evaluation and the improved method of animal mode.

Method: By analysing clinical diagnosing and curative effect standard of Chinese and Western medicine of chronic skin ulcer, author summarized its characteristic and preparation of animal models. Finally, the anastomosis of the existing animal models and clinical symptoms were discussed.

Result: Yang syndrome animal model is mainly the method of bacterial infection. Yin Syndrome model have four categories: Simple skin defect, Burn, Subcutaneous foreign body implantation and composite factor superposition method. But how to combine the clinical symptoms, replicate animal model more effectively become the focus in the future.

Conclusion: In model making, existing composite factor superposition method, which has clinical basic physiological and pathological characteristics in a large extent. But in the determination of indicators, western medicine for chronic skin ulcer has no unified diagnostic criteria and to establish the quantitative standard of reasonable is the development direction of chronic skin ulcer animal model.

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HHME16-12
RESEARCH ON VISUAL IMPACT AND ASSOCIABLE MAPPING OF ANTI-CORRUPTION POSTER DESIGN ART BASED ON EYE-TRACKING TECHNOLOGY TESTING
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Objectives: In order to perceive and verify the visual impact effect of anti-corruption poster design art through scientific experiment way, and the graphic elements of poster image are designed in accordance with visual track characteristic.

Methods: Selected seven staffs in government departments and institutions as target audience group of anti-corruption posters, eye-tracking technology dynamically captures sight of staffs to gain heat map, focus map and gaze trace map on associated vision of poster design.

Results: Through the eye-tracking testing, this paper explores the associative mapping effect using for image construction in anti-corruption posters, and also analyzes the difference of visual track and focus between paper media and mobile phone APP.

Conclusions: The negative visual associative memory and self-mapping effect of image can enhance the visual impact of poster design, simultaneously more benefit for prompting anti-corruption propaganda of new media on the background of mobile Internet times.

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HHME16-13
AN EFFECTIVE HYBRID ALGORITHM TO SELECTIVE HARMONIC ELIMINATION TECHNIQUE IN BIOMEDICAL ELECTRONIC DEVICES
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Objectives: In the field of high-power medium-voltage energy control, in particular for power semiconductors on biomedical and minimal-power electronic devices, multilevel converters play a vital role because of their capability of high voltage operation, high efficiency, and low electromagnetic interference. The basic converter is based on the multilevel selective harmonic elimination. The objective of selective harmonic elimination is to determine the switching angles so that specific lower order harmonics such as the 5th, 7th, 11th, and 13th are suppressed in the output voltage of the inverter. Due to nonlinear transcendental nature of these equations in selective harmonic elimination, there may exist simple, multiple or even no solution for a particular value of modulation index.

Methods: An effective new hybrid computation approach is proposed to obtain the switching angles and it is applied to a single phase voltage source inverter. Firstly, we transform the initial transcendental system into nonlinear algebraic polynomial systems by using Chebyshev expansion. Then, resultant elimination method, elementary symmetric polynomials technique and efficient numerical computation are introduced in our hybrid method.

Results: The feasibility and effectiveness of the proposed algorithm is evaluated with intensive simulation.

Conclusions: The obtained results show that the hybrid computation algorithm is more efficient than the existed algorithm in eliminating the selective harmonics for the higher order.

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**HHME16-14**

**THE RELATIONSHIP ANALYSIS BETWEEN GLOBAL CLIMATE CHANGE AND INFECTIOUS DISEASES OUTBREAK**

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**Objectives:** Global climate change leads to climate warming, sea level rise, extreme weather, flood, drought, media ecology etc. problems. They affect infectious diseases spread by direct or indirect ways. Research on relation between climate change and infectious diseases has important significance for preventing and controlling the infectious diseases outbreak.

**Methods:** Some quantitative and qualitative research methods were contrasted and analyzed. Single factor correlation analysis, multivariate regression analysis, principal components regression analysis, gray relative analysis and GIS methods were used.

**Results:** Global climate change will make global average temperature increase 3°C in 2100, it leads to the proportion of malaria population in world population will increase from 45% to 60%, 50 million to 80 million malaria cases will appear. The distribution areas of dengue fever virus will extend 1,600 Km toward the relative cold areas. Encephalitis B virus concentration will rise in 26-31°C environment, if the average temperature is high than 25°C, it easily causes Encephalitis B virus outbreak. The suitable temperature of SARS virus spread is from 13 to 27°C.

**Conclusions:** Many evidences indicate that global climate change has significant impacts on infectious diseases outbreak and human health. Mechanisms of infectious diseases outbreak are decided by the relationship of environment, causative agent, host and human. It is essential to study and detect this relationship for protecting human health.

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**HHME16-15**

**INDOOR DUST CONCENTRATION MONITOR BASED ON BLUETOOTH**

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**Objectives:** With the rapid development of the global economy and industrialization, the living standards of human being are constantly improving. However, the environmental problems are becoming more and more prominent. Air is one of the necessary elements for the survival of human being, and the air quality is directly related to people’s health. Indoor pollutants are mainly dust. It is a direct threat to people’s health. Long time exploration in the dust could cause a wide range of diseases, such as respiratory and cardiovascular diseases. Therefore, it is very necessary to design a monitor of the dust concentration.

**Methods:** A indoor pollutant monitor system based on Bluetooth technology was built for dust detection in air. The hardware system and the application software were designed. The system contained a dust concentration sensor, a microcontroller unit (MCU), a bluetooth module, a mobile device and an application software. The dust concentration was detected by the dust concentration sensor and sent to the MCU MSP430. The MCU digitalized this analog signal and sent the data through the serial port to the bluetooth module. The mobile device received the data via the bluetooth communication from the above buletooth module. An application software was developed and run on the mobile device to display and save the dust concentration data on the local storage. The data could also be sent to and saved on the remote cloud platform as long as the mobile device is online.

**Results:** The designed system was tested on an MIUIV 4 mobile phone. It was shown that this system could acquire the real-time dust concentration in air.

**Conclusions:** The experimental result confirms that the designed system could be considered as a real-time indoor dust monitor device. This design is advantageous in that the cost of the display device has been reduced, and that the app can also be packaged for promotion. The dust in the air has a very important influence on human life and health. Therefore, the designed system could be used for the indoor air pollutant monitor and environment alert.

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**HHME16-17**

**DRUG TOXICOLOGY RESEARCH BASED ON THE CHARACTERISTICS OF THE DISEASE**

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**Objective:** The animal disease model is applied to Preclinical drug screening, pharmacodynamic and safety evaluation of animal disease models in the process of drug development in the future.

**Method:** The best strategy for the evaluation of drug safety is to create an animal model of clinical disease. Use of conventional laboratory animals and non-human primates, According to different animal and human have high degree of approximation in terms of nerve function structure, immunity, metabolism. And then, Constructing an approximate and maximum program approach to clinical disease animal models. Such as Parkinson’s disease, diabetes, Alzheimer’s disease, cardiovascular and cerebrovascular diseases.

**Result:** At present, the clinical medication based on human diseases, but the drug safety evaluation in animal is normal, any different physical state seem to affect the curative effect, medication after safety etc. The reason of scientists have not chosen non toxicity animal model for conventional drug safety evaluation is a lot. For example, most people cannot get and use the non conventional animal model. In addition, some changes of pathology and physiology may increase the toxic reaction, and then produce new and unknown results.

**Conclusion:** The three aspects of safety, effectiveness, Quality controllability is an essential indicator of the evaluation of a drug. Safety as a primary condition is the most important condition, so the study of the toxic and side effects of drugs is very important. Toxicity evaluation of drugs is a very important part in the process of drug screening. Experimental animal is an important supporting condition for the research of toxicology, and it has irreplaceable function in many fields. It is the foundation and important component of biomedical and even the whole life science research. Future drug safety assessment will certainly based on animal models of clinical disease.

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HHME16-C01
COX-2 PROTEIN EXPRESSION ON MEMORY FUNCTION AFTER SEVERE TRAUMATIC BRAIN INJURY
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Objective: In the twenty-first century, the life science has been studied from the genome research into the structure and function of the structure, which can further reveal the mystery of life.
Method: As human beings begin to carry out functional gene research, the status of proteomics has been raised to an unprecedented level, therefore, proteomics will become one of the most strategic points in the future- one of the top strategical points to conquer human beings gene war.
Result: Checking the data of gene sequencing, analyzing the gene expression -the structure of COX-2 protein, function and the relationship, which is an important component of the plan. In this paper, it takes the relationship between COX-2 protein structure and function as the breakthrough point, with the aid of introducing the COX-2 protein molecular structure analyzing the application of intelligent computing method in the prediction of COX-2 protein structure.
Conclusion: Moreover, by setting up the severe traumatic brain injury model of COX-2 protein molecules, so as to realize the detection of COX-2 protein severe traumatic brain injury features.

HHME16-C02
HOSPITAL NETWORK SECURITY INTRUSION DETECTION BASED ON DIGITAL COMPUTING
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Objective: The hospital network user terminals aren’t only the traditional computer users yet, but also include the on-vehicle, ship-bone, airborne terminals and hand-held and other hospital network users, these users of which jointly constitute a hybrid hospital network.
Method: The hybrid hospital network has become the trend of hospital network distribution and design, in the hybrid hospital network, since the phase-group character between hospital networks is different, a hospital network fluctuation hopping resonance signal is generated in the hospital network switcher and data communication, and this resonance signal exists in the hospital network communication system in the form of noise, which is represented with a hopping pulse and brings the hospital network fluctuation and signal instability, and thus results in the startup hysteresis, server load, tremble and other phenomena. Moreover, by setting up the severe traumatic brain injury model of COX-2 protein molecules, so as to realize the detection of COX-2 protein severe traumatic brain injury features.

Result: Checking the data of gene sequencing, analyzing the gene expression -the structure of COX-2 protein, function and the relationship, which is an important component of the plan. In this paper, it takes the relationship between COX-2 protein structure and function as the breakthrough point, with the aid of introducing the COX-2 protein molecular structure analyzing the application of intelligent computing method in the prediction of COX-2 protein structure.
Conclusion: Moreover, by setting up the severe traumatic brain injury model of COX-2 protein molecules, so as to realize the detection of COX-2 protein severe traumatic brain injury features.
Conclusion: Combined with the application of hospital networking technology in the distribution hospital network’s energy efficiency management, discussing the technical measures of energy saving and loss reduction of the asymmetric grid hospital network.

HHME16-C06
USER EXPERIENCE FOR HOSPITAL HANDHELD MOBILE DEVICE SOFTWARE INTERFACE DESIGN
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Objective: Based on the technical characteristics of human-computer interaction, combined with the interface design theory, the viewpoints that divided the interface design elements into the dominant and implicit factors are raised. Meanwhile, the model that design implicit elements dominantly is established.

Method: For hospital handheld mobile device interface design, through knowledge transmission and transformation among requirements analysis, development design, and test, user experience oriented interface design process is constructed.

Result: And the model that map the relationship between the interface providers and the interface recipients. The research of the user interface design of mobile hospital handheld devices is a new research topic in the field of human-computer interaction.

Conclusion: The traditional user interface design methods are inadequate to meet the increasingly complex interactive environment. Under such circumstances, this paper suggests that the user experience should be emphasized during the process of designing the interactive interface. It investigates the effect of the user experience design on the mobile device user interface design idea.

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HHME16-C07
LIFE ANNUITIES COMBINATION MODELS BASED ON A MODEL OF FUZZY INTEREST AND STOCHASTIC MORTALITY FOUNDATION ITEM
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Objective: Life annuity refers to on the known conditions that someone is alive, he or she pays the insurance according to the pre agreed amount in a continuous way or a certain period and each annuity payment must take the survival of the annuitant as a standard.

Method: Once the annuity recipient dies, payment will be stopped immediately, which is the main form of the supplementary pension insurance i.e. the enterprise annuity in the insurance industry. The study shows that the actuarial present value of the survival annuity is mainly affected by the future mortality rate and the interest rate of the insured.

Result: During the period of the payment of the pension, most of the statistical data are used to estimate the future interest rate, which is impossible for financial institutions whose information is scarce to carry out.

Conclusion: The duration of life annuity is generally longer, which needs to be considered in the long term when describe the mortality. At present, unexpected events occur frequently, such as flood and mud rock flow, heavy traffic accident, fire, etc., which makes people have to consider the death rate and the jumping of the rate when study life annuity.

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HHME16-C08
BASKETBALL PERSONNEL TRAINING MANAGEMENT BASED ON THE DYNAMIC QUALITY CONTROL
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Objective: Teaching quality is the lifeblood of college survival and development, and improving the teaching quality is the eternal theme of teaching management. To establish teaching quality monitoring system is an important measure to guarantee improvement of the teaching quality.

Method: And the teaching quality evaluation is an effective way to improve the teaching quality. By reasonable teaching evaluation, the teaching management department can scientifically and comprehensively learn teachers’ teaching situation.

Result: So that teachers can identify gaps and take measures to further facilitate the teaching. The method proposed in this paper is the evaluation of the teaching quality based on the dynamic Analytic Hierarchy Process sets. According to dynamic and Analytic Hierarchy Process teaching quality evaluation factors, this paper clarifies how to create dynamic Analytic Hierarchy Process sets and analyze the dynamic Analytic Hierarchy Process evaluation results.

Conclusion: Meanwhile it also plays a valuable role in exploring better teaching quality evaluation methods.

HHME16-C09
SPORTS MOTION SYSTEM BASED ON DIGITAL GAMES
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Objective: Nowadays our society is changing with each passing day, new things appear endlessly every day, the emergence of digital technology application in sports motion design is also an important manifestation of technological development, traditional design methods cannot meet people’s growing aesthetic demands and the evolving aesthetic concepts.

Method: The pursuit of technology and humanities, social, economic, ecological and other aspects of coordination, is the future development direction of sports motion design, based on the combination of both process or may appear to the main issues discussed.

Result: This paper takes the overview of digital simulation technology as a key point, discussing the influence of digital simulation technology on the sport industry as well as its specific application, which can make the designers update designing concept during the process of sports design, so as to achieve the personalized requirement of the modernization, to achieve the combination of the sports motion.

Conclusion: The design motion and digital technology, the sport motion and digital technology can bring out the best in each other, the perfect combination, make the sport motion design can be better and better.

HHME16-C10
RESEARCH ON BASKETBALL TRAINING AND DIET SUPPLEMENT TO HUMAN DISEASE PREVENTION AND REHABILITATION
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Objective: With the popularization of computer and the rapid development of network technology, all kinds of information transmission
mode has been greatly changed, the entire human society has entered the information age.

**Method:** Under such kind of background, the teaching mode of basketball teaching and training must be changed. In order to ensure the quality of training, the essential dietary nutrition support measure is very essential.

**Result:** In this paper, it takes the concept of nutrition support as the starting point, combined with the construction of basketball training mode under network environment, based on the analysis on the composition of nutrition support for basketball players and the feature of energy supporting system for basketball players, Conclusion So as to explore a reasonable diet nutrition supplement to basketball players, which can play an important role in improving the training effectiveness as well as the competitive ability.

**HHME16-C11**
**SKATING SPORTS COMPETITION NUTRITION SUPPLEMENT AND FACTORS**

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**Objective:** As for skating athletes, sports nutrition is a kind of special nutrition, which takes the public nutrition as the basis.

**Method:** Meanwhile, the means of having nutrition supplement plays a very important role in raising the skating sports abilities, since reasonable nutrition can provide adequate energy for the exercise and ensure the normal operation of the body function, which also can help the recovery after having strenuous exercises, reduce the fatigue degree caused by exercises or delay its occurrence.

**Result:** With the development of competitive skating sports, during the period of high strength training, the demands on the nutritional needs for the skating athletes should be increased, which needs the researching staff to take some measures by dietary and supplement agent to ensure the body needs, so as to complete the training program successfully.

**Conclusion:** In this paper, based on the investigation and analysis of the status of dietary nutrition, the strategy of having scientific and reasonable dietary nutrition supplement and nutrition supplement is proposed, so as to promote the training level of the skating athletes.

**HHME16-C12**
**RESEARCH ON SMART HOSPITAL MONITORING SYSTEM BASED ON ZIGBEE NETWORK**

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**Objective:** ZigBee technology is a wireless transmission technology agreement with a close, low complexity, low power, low-rate, short latency, high network capacity, low cost, reliable, safety features, mainly used for short distance, data transfer between low-power and the transmission rate is not high, and a variety of electronic devices typically have periodic data, intermittent data and low latency data transfer applications.

**Method:** To realize the remote control of the smart hospital, the order will be forward to the ZigBee coordinator node, then the ZigBee network will control terminal equipment. As cluster -tree algorithm easily leads to increased transmission delay, and the route loss is too large, therefore, the original algorithm is improved: a tree network topology construction to identify the influence of a single factor on the regeneration induction of explant stems.

**Result:** If the destination node belongs to a adjacent node of the source node, then the data can be directly transferred to the destination node, otherwise you must first create the relevant constituencies of the destination node, then select the appropriate relay nodes.

**Conclusion:** The Simulation results show that when the more number of nodes increasing, the improved algorithm can reduce 30% energy consumption, along with the time, the number of death nodes will effectively reduce 10%, then it will balance the network load effectively.

**HHME16-C13**
**THE RESEARCH OF HOSPITAL SPORTS DANCE PHYSICAL TRAINING NUTRITION AND TRAINING ANALYSIS**

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**Objective:** With the improvement of hospital sports dance competition level, the change of the rules, as well as more attention and investment from the countries, competitions in hospital sports dance which put forward higher requirements on the hospital sports dance athlete’s fitness level, are facing increasingly fierce antagonism.

**Method:** Although the research in hospital sports dance physical monitoring and training methods is still in weak phase, In training practice, the general coach attaches great importance to hospital sports dance player’s physical ability training.

**Result:** Through the origin of fatigue recovery training, fatigue recovery competitive ability structure, fatigue recovery physical training content, fatigue recovery training and traditional training aspects such as comparative analysis the content of study provide theoretical basis for fatigue recovery the hospital sports dance training, then according to the design principles and fatigue recovery training according to fatigue recovery fitness training hospital sports dance project characteristics.

**Conclusion:** By combining the characteristics of hospital sports dance project and daily physical training, mainly in anaerobic glycolysis for energy training, core strength training, agility training, speed-strength and lower limb knee strength training.

**HHME16-C14**
**CO₂ RESPONSE MODEL OF PHOTOSYNTHESIS APPLIED IN PLANTS DYNAMIC BIOCHEMICAL RESEARCH**

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**Objective:** This article studies the browning, pollution and sprouting of three explants under different CO₂ and different cane sugar concentration to identify the influence of a single factor on the regeneration induction of explant stems.

**Method:** The experiment result shows that under low CO₂ circumstance, the browning and pollution are both inhibited. Meanwhile the low CO₂ (10°C) also led to a low sprouting rate of explant.

**Result:** The lowering of CO₂ should be appropriate in order not to influence the normal induction and differentiation. Except that the appropriate high concentration cane sugar (20-25 g/L) has led to an aggravated browning, it has a positive effect on all the rest indicators.

**Conclusion:** The present experiment studies the browning, pollution and sprouting of explant of euonymus japonicus thumb, taxus chinesis and ficus carica L. under different CO₂ and different cane sugar concentration, to identify each factor’s influence on the reproduction induction of three kind of explant stem and therefore provide a theoretical basis for the establishment of technical standards for the industrialized production of good quality seedlings of euonymus japonicus thumb, taxus chinesis and ficus carica L.
HHME16-C15
THE HOSPITAL HUMAN RESOURCES MANAGEMENT BASED ON KNOWLEDGE MANAGEMENT AND COLLABORATION
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Objective: Science and technology can play more and more important role in the social and economic development, in today’s market economy environment, the competition between hospitals finally is in the competition of core technology; hospital can guarantee itself not to be eliminated by the market only by having constant technological collaboration, the only way that hospitals can maintain long-term competitive advantage is the continuous and effective management of technological collaboration, which can strengthen their own core technology capabilities.

Method: The hospital should break the situation that the technological collaboration and market collaboration are separated from each other, which should set up the technological collaboration and market collaboration management from the angle of total collaboration management.

Result: It is a very urgent issue under the challenge of the current environmental changes.

Conclusion: In this paper, it takes the concept and definition of technological collaboration management as the starting point, with the aim of the interpretation of the related content of technological collaboration and hospital technological collaboration management, combined with the theoretical model of technological collaboration, discussing and exploring the hospital technological collaboration as well as the choice of market collaboration strategies.

HHME16-C16
RESEARCH ON AEROBICS TRAINING APPLIED IN HOSPITAL BASED ON NETWORK TECHNOLOGY
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Objective: With the application of network technology in aerobics education and training more and more widely, it has become both opportunities and challenges to aerobics educators.

Method: This paper selected aerobics that are the most popular course in the hospital as the researching target, making comparative analysis on the qualitative and quantitative of effect caused by the application of network technology in training.

Result: Through the experimental observation, it is found that network training system had brought many new changes for the training of aerobics. network technology and modern educational technology, educational informatization development make a spurt of progress. Our university network education as the rapid development of education informatization, it has attracted more and more attention in education.

Conclusion: At present, China’s network education in hospitals has penetrated into many fields, sports training and aerobics training should also follow the development of network education, network training and speeding up the sports aerobics development of network training, training pattern to form multiple channels, optimize the training of Aerobics training of physical education.

HHME16-C17
THE DESIGN AND IMPLEMENT OF HOSPITAL INTELLIGENT SAFE MONITORING SYSTEM BASED ON WSN
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Objective: Hospital intelligent security is the focus of today’s world one of the issues that people are concerned about each of the serious consequences of hospital intelligent-borne diseases, so that hospital intelligent safety has become a global public health priority issues.

Method: Since the beginning of reform and opening up, China’s hospital intelligent security situation is not optimistic, traditional hospital intelligent regulatory system has to meet the needs of development. This paper realized the design of wireless sensor network hospital intelligent monitoring system based on WSN using Zigbee technology and RSSI ranging technology.

Result: Hospital intelligent safety monitoring and control system is designed to control a market point module for the establishment and management of the design and implementation of two modules. Modern microsensor has low cost, low power characteristic, it can realize the wireless communication and computing performance, a large number of the sensors organizations constitute the wireless sensor network.

Conclusion: The system has been tested, and established on the basis of the system architecture.

HHME16-C18
HOSPITAL ANNUITIES COMBINATION MODELS BASED ON A MODEL OF FUZZY INTEREST AND STOCHASTIC MORTALITY
Xia T.Y.
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Objectives: In actuarial practice, Insurance payments are mainly on the discrete type. Using the feller process with jumps with the non mean reversion characteristic to describe the continuous mortality.

Methods: And take the method of the definition on the entire value of remaining life in Actuarial Science to transform it into discrete type.

Results: Therefore, we can establish the actuarial present value model of discrete hospital life annuity.

Conclusions: In addition, the formula of the net single premium on the hospital life annuity is given.

Acknowledgment: This work is supported by Cooperative IUR cultivation project of Suzhou University (No.2014cxy04), Key projects of support program for outstanding young talents in Colleges and Universities (No.gxqzd2016340), Natural science research project of Anhui Province (No.KJ2013B288), Natural science project of Anhui Provincial Department of Education (No.KJ2011B176), Natural science research project of Anhui Province (No.KJ2016A770), Natural Science Foundation of Anhui Province (No.1508085MA10).

HHME16-C19
HOSPITAL EFFICIENCY EVALUATION BASED ON DEA
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Objective: The overall establishment of the hospital system covering urban and rural residents as well as coordination and facilitation of the construction of urban and rural hospital system is an important task in our country at present. With the economic and social development in China, financial input into hospital is also increasing.

Method: This paper applies DEA model to evaluate the input-output efficiency evaluation of hospital from 2006 to 2008, measures and assesses whether the financial hospital input expands the coverage of local hospital according to the degree of economic and financial input into hospital.

Result: The study shows that the economic and financial input into hospital in a majority of areas in our country is not adequate, that the use of hospital fund is not reasonable, and that the financial input into hospital can seldom expand the coverage of local hospital.

Conclusion: Finally, from facilitating economic development, increasing financial income, enhancing financial support for hospital, making reasonable use of hospital and expanding the coverage of hospital, the
HHME16-C20
REGULARIZATION ROTATIONAL MOTION BLUR MEDICAL IMAGE RESTORATION BASED ON MIXED NORM
Liu X.R.
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Objective: Medical image restoration is important in medical image processing. The specified degradation model can rejuvenate degraded medical images. Rotary motion blurred medical image is working in the high speed rotating platform. To some extent, there is considerable relative rotation angle between Imaging system in a short exposure time and the target, which results in a blurring of the acquired picture.

Method: Motion blur is very common in the blurred medical images, and rotating motion blur is one kind of special and general fuzzy form.

Result: Based on the principles of linear motion blur restoration, to change the rotary motion into linear motion blur, this paper propose a regularization recovery mode which is equipped with a norm, and with the help of alternative separable function algorithm to solve the model.

Conclusion: As a result of the regularization method of norm to the noise and ringing has a good inhibitory effect is that the recovery effect is very good.

HHME16-C21
DESIGN OF SPORTS FOOD NUTRITION ANALYSIS PLATFORM BASED ON DATA MINING TECHNOLOGY
Su H.B.
Inner Mongolia University of Finance and Economics, Inner Mongolia, China

Objective: The purpose for the design of sports food nutrition analysis platform is to provide the user an internet-based network learning environment. Functions the platform needs to realize are achieved by the interaction between application server and the user’s browser.

Method: There are a variety of information and data stored in the system sports food nutrition analysis platform, including student information, Sports pictures, sports action technology demonstration videos, sports food materials, student interactive message, sports network test scores, etc.

Result: These data are stored in the form of data in different formats in the database server, and organized and maintained by the database server. As an important aspect of the measure of living standards of people, sports industry and sports undertaking need to adapt to the development of modern information society. While, physical food nutrition is a practical and participatory bilateral activity for teaching and learning, and the current resources on the network are less than other disciplines, and lack systematization and integrity. Based on computer network technology, multimedia technology and modern communications technology.

Conclusion: This paper designs and develops interactive food nutrition analysis platform for the college physical food nutrition and physical daily management.

HHME16-C22
THE IMPROVED TRAINING OF SPORTS NUTRITION UNDER TRADITIONAL ETHNIC CULTURE
Li M.
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Method: This article uses hospital sports dance nutritions as an example and conducts a detailed discussion on the method that includes traditional ethnic culture in the training of hospital sports dance nutritions as well as the possibilities of the application of the method, by analysing the current conditions of training, proposing measures for reform and the analyses of real-life examples.

Result: It is an efficient method to promote the inheritance and development of traditional ethnic culture that the elements of such culture are included in the nutritions of relative subjects. This is helpful in the advertisement and advancement of the traditional ethnic culture in a new era as we see it now.

Conclusion: The training of hospital sports dance nutritions in universities would also benefit from the method in that the knowledge received by students would be more practical.

HHME16-C23
EVALUATING ON HOSPITAL ECOLOGICAL WATER POLLUTION BASED ON ANALYTIC HIERARCHICAL MODEL
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Objective: Due to poor water resources in our country, water pollution is becoming more and more serious, constructing the hospital ecological water evaluation index system and model AHM based on hospital water ecological system level fuzzy comprehensive evaluation model, and confirm the index membership.

Method: Taking Wuhan as an example, this method studied from 2005 to 2010 years of comprehensive hospital water level, the results showed that hospital water resources of Wuhan city are the shortage.

Result: At the same time, the rate of waste-hospital water treatment and back to reuse both are low, the pipe leakage more serious, the level of the hospital water ecological economic system at the medium stage.

Conclusion: But with the level of Wuhan hospital water ecological system increased year by year, presenting the development trend of the benign, removed from the water polluted raw water to human body health harmful pollutants, improved the safety and reliability of drinking water.

HHME16-C24
SCHEDULING METHODS FOR HOSPITAL MEDICINE MANAGEMENT
Wang F.
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Objective: With the development of cloud computing in various areas, there are a variety of problems occurred such as hospital medicine management, hospital medicine scheduling and security mechanism and so on, which are reflected day by day, while the strategy of scheduling virtual hospital medicine has become the core issue of cloud computing research.

Method: The core problem of cloud computing is to deal with the dynamic scheduling problem of physical and virtual hospital medicine, which can be regarded as a new problem in cloud computing, in order to achieve energy saving and emission reduction with high performance and low investment as well as some other targets.

Result: In this paper, it takes the overview of the cloud computing technology as the cutting point, with the help of the interpretation of computing hospital medicine scheduling under the environment of cloud, discussing the implementation of cloud computing task scheduling with optimization method of genetic algorithm.

Conclusion: The essence of scheduling hospital medicine is to find out the appropriate hospital medicines and make reasonable distribution for a large number of requests, so as to meet the request of task,
optimize time and improve the utilization rate of hospital medicines as far as possible.

**HHME16-C25**

**MUSIC THERAPY ON ANXIETY AND DEPRESSIVE PATIENTS**

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**Objective:** To observe the effect of music therapy on anxiety, depression and pain of depressive patients.  
**Method:** Totally 122 depressive patients were divided into test and control group by adopting randomized controlled trial. Patients of test group were given music therapy based on routine treatment and nursing. Patients of control group were accepted routine treatment and nursing only. Then all cases were evaluated by adopting state trait anxiety inventory (STAI), center for epidemiological studies depression scale (CESD), and numeric rating scale (NRS) for pain on anxiety, depression and pain of them before and after music therapy. And satisfaction degree toward music therapy of all cases was investigated and observed.  
**Result:** However, the STAI score of control group w as still above the norm. The STAI score of test group cases was lower than that of control group ($p < 0.05$). There was statistical significant difference between them ($p < 0.05$). However, there was no statistical significant difference in terms of CESD and NRS score between the two groups ($p > 0.05$). Patients of test group thought that the music therapy can bring them enjoyment, comfort, change in mood and elevate their spirits.  
**Conclusion:** Music therapy can relieve both state and trait anxieties of depressive patients. And it is a popular accepting accessorical therapy for depressive patients.

**HHME16-C26**

**DEVELOPMENT OF REAL-TIME BLOOD PRESSURE MONITORING SYSTEM BASED ON WIRELESS SENSOR**

*Wang F.*  
Zhoukou Normal University, Henan, China

**Objective:** To study and design a real-time blood pressure monitoring system based on wireless sensor.  
**Method:** MSP430 series micro-processor is used to conduct the signal conditioning and numerical processing in the design. The framework and function of this system are analyzed and designed, which specifies the main function of physiological data acquisition and wireless transmission mode, monitor base and monitor center, and introduces the development environment and important technology realizing this system.  
**Result:** The system is convenient to the treatment of patients, and the monitor base and monitor center can assist doctors to diagnose and treat patient’s condition effectively.  
**Conclusion:** The system utilizes wireless sensor and communication technology as the communication technology of physiological data acquisition, which is well suited to organize the preceding wireless sensor network of blood pressure monitor, and can reduce the cable wire splices on patients largely, and is convenient for the treatments of patients. The monitor base and monitor center of the system can comprehensively and accurately record the vital signs, medical treatment and nursing of patients and it is convenient for doctors to supervise patients’ condition, providing medical treatment, and nursing strategy pointer.

**HHME16-C27**

**HOSPITAL-COMMUNITY FAMILY-CARE MANAGEMENT ON DIET CONTROL BETWEEN PATIENTS**

*Wang J.H.*  
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**Objective:** To evaluate the effect of hospital-community-family-care on diet control in patients with type 2 diabetes mellitus (T2DM).  
**Method:** Totally 100 T2DM patients were divided into two groups. All patients received routine diet control intervention after discharge. In addition, the patients in the experimental group received hospital-community family-care diet management. The patients’ daily intake, body mass index, BMI, HbA1c and blood lipids were investigated before intervention and one year after intervention.  
**Result:** After intervention, the rates of adherence to recommendations of daily intake of total calorie, cereals, vegetables, eggs, meat, beans, milk, oil, fish and shrimp and salt in the experimental group were significantly higher than those in the control group ($p < 0.01$). The BMI, HbA1c, blood lipids in the experimental group were significantly lower than those in the control group ($p < 0.01$).  
**Conclusions:** Hospital-community family-care diet management can facilitate T2DM patients to control blood glucose, body weight and blood lipids and improve their diet control behaviors.

**HHME16-C28**

**STUDY ON TUMOR HOSPITALS’ OPTIMAL SCALE BASED ON DATA ENVLOPMENT ANALYSIS**

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**Objective:** To analyze the optimal scale for hospitals in China so as to control the over-development of hospitals and avoid the waste of health resources.  
**Method:** Power tumor hospitals in Anhui were selected as a study sample and input and output indicators were selected and DEAP (2.1) software was applied to analyze the status of economic return to scale of power tumor hospitals from 1991 to 2011. Inflexion points were identified to determine the optimal scale of hospital beds and staffs.  
**Result:** In 2016, 21 of 24 hospitals were in Data Envelopment Analysis (DEA) effectiveness status, and the other 3 hospitals were in DEA non-effectiveness status; 26 scale inflexion points were identified through time-series longitude analysis. Through the analysis of inflexion points, the strict control standards for power tumor hospitals in Anhui were 559 beds, and 1120 staffs; the flexible control standards were 844 beds, and 1885 staffs.  
**Conclusion:** The scale of power tumor hospitals and the number of large-scale hospitals should be strictly regulated. The operation efficiency of tumor hospitals should be further improved and the average length of stay in hospitals should be cut down in the future.

**HHME16-C29**

**THE PATTERN RECOGNITION METHOD BASED ON BP NEURAL NETWORK APPLIED IN SERUM DETECTION**

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**Objective:** Medicine Detection plays a very important role in clinic medicine, and many of the analysis of medical testing data processing programs can be summed up into pattern recognition problems.
Method: The BP neural network has very strong nonlinear mapping ability, which has very extensive application in the field of pattern recognition. So, the pattern recognition method based on BP neural network has been widely used in many medical detection problems.

Result: This paper used Matlab as the neural network toolbox tools to implement. Taking the Serum cholesterol content detection problem as example, discussed the application of this method in medical detection and its related problems.

Conclusion: In order to improve prediction accuracy of BP neural network, adopt PSO algorithm to optimize BP neural network weights value and threshold value. The results show that the average relative error predicted by PSO optimized BP neural network.

HHME16-C30
FOLLOW-UP MANAGEMENT BASED ON DAG CIRCULATION COMBINED WITH PIO IN NON-ALCOHOLIC FATTY LIVER DISEASE PATIENTS
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Objective: To evaluate the effect of follow-up management based on DAG (Directed Acyclic Graph) circulation combined with PIO (Problem, Intervention, Outcome) in type patients complicated with non-alcoholic fatty liver disease (NAFLD).

Method: Totally 208 NAFLD patients were randomly divided into two groups. The patients in the control group received routine follow-up management. The patients in the experimental group received follow-up management based on DAG circulation combined with PIO.

Result: In addition, patients in the experimental group received follow-up management based on DAG circulation combined with PIO. Results The patients’ mastery of disease related knowledge, self-care behaviors and biochemical indexes in the experimental group were significantly better than those of control group at 3 and 6 month after intervention (p < 0.05).

Conclusion: The follow-up management based on DAG circulation combined with PIO is a patient-centered and interactive model, which can effectively improve the patients’ clinical outcomes, improve the patients’ self-care behaviors and quality of life.

HHME16-C31
IMPLEMENT OF MEDICAL TESTING INSTRUMENT BASED ON MICROFLUIDIC CHIP
Li L.T.
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Objective: With the rapid development of microelectronics technology, biomedicine testing instrument appeared many new trends. In this paper, the embedded system is applied to the development of medical testing instrument. The core platform based on the microfluidic chip is designed for the embedded medical testing equipment, and its hardware and software system is introduced in this paper.

Method: The basic principle, design idea and implementation method, and at last a practical example are introduced.

Result: By using the medical testing equipment and software and hardware platform, the time and cost can effectively avoid the equipment development of duplication, reduce and shorten the time of the launch of new products.

Conclusion: Compared with the traditional pattern of single-chip microcomputer and PC, biomedicine instrument embedded platform based on the microfluidic chip has high performance, multiple peripheral interface, low cost, portable, which can work independently and so on.

HHME16-C32
DESIGN AND IMPLEMENTATION EMBEDDED ECG MONITOR BASED ON ANDROID
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Objective: Presently, ECG monitor encounters the trend of miniaturizing, inteligentizing and networking. Short distance and limited channels are shortcomings of the existed telemetric ECG (Electrocardiograph) monitoring system, while the existed remote monitoring system has the disadvantages of high cost and low Data Transfer Rate. Furthermore, neither of these two systems can implement real-time monitoring on the spot.

Method: So, an embedded ECG Monitor based on Android, which successfully solves these problems, is introduced. With Android embedded system technique, this Android embedded monitor, which can not only realize real-time monitoring on the spot, but also analyze the ECG data, has the advantages of low cost, small volume, light weight, high stability, powerful networking function and so on.

Result: And by communicating through Internet, which has the features of low cost, high data transfer rate and good expandability, it can also send ECG data to monitoring center in order to achieve long team monitoring.

Conclusion: The development of this monitor provides a solution for medical instruments’ implementation and networking, and is of certain reference value.

HHME16-C33
OPTIMIZATION OF FERMENTATION CONDITIONS OF BACILLUS NATTO WITH HIGH-YIELD NATTO KINASE
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Objective: To study how the enzyme activity of natto kinase is influenced by various factors, such as method of culture, temperature of culture, inoculation amount and the time of culture and so on in the process of fermentation of natto kinase produced by natto bacillus and conduct research on orthogonal test of the most influential factor to get the best combination of influential factors by single-factor test.

Method: When the way of shaking culture selects 180r/min, temperature of culture is 37 degrees, inoculation amount is 8.0%, the time of culture is 48 h and the initial pH value is 7.0, the enzyme activity of natto kinase can reach the maximum 768 U/ml.

Result: Carrying out the optimization of the best combination towards the fermentation conditions of high-yield natto kinase produced by natto bacillus is significant to increase production of natto kinase.

Conclusion: It provides conducive conditions for lowering production costs, which is worthy of further research and promotion.

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HHME16-C34
THE STUDY ON MALIGNANT NON-COMMUNICABLE DISEASES ECONOMIC BURDEN ANALYSIS

Yan K.
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Objective: The economic burden of malignant non-communica-
dable diseases in China was 196.344 billion RMB, accounting for
58.84% of the total economic burden of all diseases and 5.67% of
GDP. In 2016, the economic burden of malignant non-communica-
dable diseases in China was 858.054 billion RMB, accounting for 71.45% of
the total economic burden of all diseases and 7.31% of GDP.

Result: The leading five orders of malignant non-communica-
dable diseases in China were malignancy, cerebrovascular disease, hypertension,
other types of heart diseases and coronary heart disease, the total eco-

Conclusion: We should maintain sharp vigilance on the double effects
of diseases accumulation and the decrease of population dividend on
the society.

HHME16-C35
INNOVATION MODEL OF THE COMBINATION SPORTS AND MEDICINE IN URBAN COMMUNITIES

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and Technology, Wuhan, China

Objective: Concept of "body medical combination" and mode in
our country is still a new research. The medical domain, "body" con-
cept into the mode of public service to the community sports. The
research type is less. Therefore, the combination of "body" of the con-
cept and mode is worthy of sports. And health community to discuss
into topics. Research using interview method, statistical method,
ensemble Analysis method and the literature material law.

Method: By the methods of literature study and logic analysis, the
article discusses the necessity and feasibility of establishing a sports
public service model combining sports and medicine in urban com-
munities. It tries to find out the way for establishing an innovation model
from the two aspects of management organization and activity con-
tents.

Result: It also analyzes the existing problems and the ways for solv-
ing these problems. Sports public service is one of the important con-
tent in the community public service.

Conclusion: Sports public service is to point to by the public sector
or quasi public department, to provide and meet the basic physical
needs of the social members, the purpose is improving the physical
quality and the quality of life, providing basic enjoying sports culture
for citizens, also provides and ensures the survival and development of
our society.

HHME16-C36
PERFORMANCE EXAMINATION SYSTEM TO THE PHYSICIAN IN HOSPITAL USING KEY PERFORMANCE INDICATORS

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People’s Hospital, Yichang, China

Objective: Judgement and management of performance is importance
method of hospital management, it have effect of guide on hospital
management. Using Key Performance Indicators(KPI)principle, accord-
ing to hospital management year and hospital management assessment,
Our hospital has formed a suit of quite scientific and reasonable exam-
ination system to physician, include monthly examination and yearly
examination.

Method: This paper, combining the performance appraisal indexes, hos-
pital management and hospital audit requirement, design a set of sci-
cific, perfect, accord with the actual hospital performance evaluation
index system.

Result: Through an objective and fair performance evaluation, it can
help hospital to introduce competition mechanism, strengthen manage-
ment consciousness, strengthen the connotation construction, imple-
ment scientific management, constantly improve of promoting eco-
nomic and social benefits.

Conclusion: That has been enhancing quality control and the medical
safe consciousness of the employees, promoting the persistent and
steady development of hospital.

HHME16-C37
RESEARCH ON FORMATION MECHANISM OF DRUG PRICE IN PUBLIC HOSPITAL

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China

Objective: Due to the different social systems, different health care
system, medical environment and paid mechanism are varied, the cur-
rent “medical care”, “drug expensive” has become a problem of gov-
ernment reform.

Method: To explore the improvement of formation mechanism of
drug price in public hospitals of China. Methods: Drug price formation
mechanism was discussed based on the experiences of advanced coun-
tries or regions, combining with centralized bidding and purchasing
practices at province basis.

Result: From the point of view of economic effectiveness, analysis was
made on working emphases, organization establishment, the improve-
ment of bidding method and the measures for drug cost control.

Conclusion: Suggestions were put forward such as using rough mech-
anisms using principle in economics classification management, the
third party restriction and network surveillance etc. so as to establish a
scientific and perfect formation mechanism of drug price gradually
eliminate the unreasonably high price of medicine and make drug price
reasonable in the public hospitals.

HHME16-C38
THE RISK MANAGEMENT RESEARCH BASED ON THE DISASTER VULNERABILITY ANALYSIS IN DISINFECTION SUPPLY CENTER

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China

Objective: Understanding of comprehensive treatment water disinsec-
tion status, the evaluation of disinfection effect, the analysis of influ-
encing factors.
Huang Z.D.

Baseline in detailed management group, while there were no statistical
satisfaction of treatment, etc., before and after management.

Results:

disease awareness score smoking, drinking, diet, standard treatment,

chemical indexes including blood uric acid and serum lipids were mea-
tioned group from April to June 2016. Patients in two groups were
pared and a questionnaire survey was conducted with the items of

Method:

Objective:

To evaluate the effect of detailed disease management

Diseases control health care types from
hospitals to community health centers

Liu X.J., Huang Z.D.

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Objective: To investigate the types of diseases suitable for downward
referral from hospitals to community health centers and to provide sug-
gestions for targeting and coordinated services provided by different
medical settings.

Method: The subjects were asked to rank relevant items from ‘the
first grade’ to ‘the third grade’ based on their importance by assigning
3, 2 and 1 to the items. In June 2016, we enrolled 51 subjects who
participated in a “medical group” coordination mode in Zhenjiang and
a” straight pipe mode” in Wuhan. Questionnaire survey was conducted
concerning the basic information and the cognitive appraisal of the fea-
tures and modes of diseases suitable for coordinated service.

Result: Thought that the primary feature for downward referral is that
the disease is at stable convalescence; the rank of importance shows
that first three features are that the disease is at convalescence, the dis-
ease itself is suitable for community care and the patient has the inten-
tion for downward referral.

Conclusion: We suggest definite referral criteria should be made, the
level of medical services in community service settings should be
improved, united wards between different medical settings should be
established, coordinated services for appropriate diseases between dif-
ferent settings should be conducted, and patients should be given guid-
ance to accept coordinated services.

HHOME16-C40

DISEASE MANAGEMENT IN COMMUNITY MANAGEMENT
OF HYPERURICEMIC PATIENT

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Objective: To evaluate the effect of detailed disease management
model in community management of hyperuricemic patients.

Method: One hundred and fifty patients with primary hyperuricemic
were randomly divided into detailed management group and conven-
tional group from April to June 2016. Patients in two groups were
managed by different models for one year. The weight height bio-
chemical indexes including blood uric acid and serum lipids were mea-
ured and a questionnaire survey was conducted with the items of
disease awareness score smoking, drinking, diet, standard treatment,
satisfaction of treatment, etc., before and after management.

Results: One hundred and thirty six patients completed the study
including 68 in detailed management group and 58 in conventional
group. After one year management, the blood uric acid, triglyceride,
low density lipoprotein (all \( p < 0.01 \)) were statistically lower than
baseline in detailed management group, while there were no statistical
differences of these indexes in conventional group\( p > 0.05 \). The stan-
dard treatment rate \( (X^2 = 70.6, p < 0.01) \) and treatment satisfaction rate

were higher \( (X^2 = 5.6, p = 0.02) \) than those in conventional group
after 1 year management.

Conclusions: Detailed disease management is an applicable and effect-
ive model for community management of hyperuricemic patients.

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Objective: With the rapid development of Chinese economy, environ-
mental pollution has become a daunting issue for China. One key
environmental research area is the study of air quality index, which
can provide basis for the study of people’s travelling and other activi-
ties, as well as regional economic development. Air quality index data
of various countries is collected and corresponding contrastive analysis is
carried out. At the same time, evaluation standard and calculating
methods are studied. Then Chinese air quality pollution data is
included and studied to find out the problems in Chinese air quality
index and suggestions on coordinated development between environ-
mental improvement and economic increase are given.

Methods: First, literature review method is adopted to make con-
trastive analysis of the air quality index of various countries and sug-
gestions on how to improve Chinese air quality index are provided.

Correlation analysis between economy and environment indicates that air quality index parameters and social economic factors are chosen and their impact on air quality is studied. Bivariate
correlation is adopted to study the air quality index parameters and social economic factors.

Results: The air quality indexes of various countries are compared
and the air quality index names, index number, pollution index and index measurement time are gained. Evaluation and measurement time are getting shorter and shorter. Countries pay more attention to the
evaluation of immediate effect of pollution. Through contrastive analy-
sis the major calculation methods of air quality index include interpo-
lation, concentration distribution contrastive method, health risk
calculation method, and etc. Spatial distribution features of major city
groups indicate: PM10 high pollution area is much larger than that of
PM10 area. Air pollution is very serious in cities in Jinjin Tang region,
the north China, Huai River region, and etc. Air quality is compara-
tively good in south east coastal cities and cities of north east China.
Air quality is best in autumn. Correlation analysis between economy
and environment indicates that air quality is greatly affected by popu-
lation density, industrial SO2 emission and the total amount of lique-
fied petroleum gas. Among them, the first two are positive indicators,
the latter is a negative indicator.

Conclusions: The results reveal that Chinese air quality index is
almost up to the internal standard. However, real-time report is not
 timelv. It is found that economic development in major Chinese cities are,
to a certain extent, at the expense of the environment.

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STATISTICAL ANALYSIS OF AIR QUALITY INDEX (AQI) AT
HOME AND ABROAD

Zhang W.R.

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Objective: To investigate the rehabilitation efficacy of landscape
design of horticultural therapy on autistic children.
Method: A total of 60 cases of autistic children were randomly divided into experimental group (n = 30) and control group (n = 30), and performed integration therapy combining medicine with education. The therapeutic milieu for children in the experimental group was the healing garden based on landscape design of horticultural therapy, while children in the control group lived in general convalescent hospital. Autism Behavior Scale (ABC) and Psycho-educational Profile (PEP) were used for assessment before and after the experimental intervention.

Result: The difference in emotional and behavioral scores of children in the two groups was of statistical significance. But there was no significant difference in sensory reaction and communication between the two groups.

Conclusion: The clinical effect of landscape design of horticultural therapy in improving emotions and behaviors of autism children who accepted all-round intervention is significant.

**Method:**

**Objective:** To realize the community public physical examination management system and adopt the one-stop physical examination process.

**Method:** In-depth research and demonstration on the development of hospital physical examination management system were carried out with foreground tool Delphi, middleware, SQL Server database platform and other computer and network technology, and the hospital physical examination management information system based on C/S three-tier architecture was realized.

**Result:** The application practice shows that the physical examination management system proposed in the paper adopts the one-stop physical examination process, and the customers can easily complete the entire examination process with the physical examination form, besides, the historical examination information of the customers has been preserved and the details can reflect the customer's health status. Through the system, we can have in-depth understanding of the physical examinees' previous, current and even future health tendency, which can not only help the physicians to make a diagnosis easily, efficiently and reasonably, but also guide customers to maintain optimal health status, besides, better differentiated services can be provided to the customers and the additional values of the services will increase, hence, more customer trusts and supports will be obtained.

**Conclusion:** The physical examination management system has realized the one-stop physical examination process for public health physical examination, and improved the management efficiency of the examination.

**Method:** The optimization algorithm of pharmic molecular docking based on universal parallel computing fabric was designed, the conformation search in molecular docking was transformed into the process of solving the problem of constrained minimization, and the small population parallel genetic algorithm with spatial shrinkage was adopted. Besides, analog computation was carried out on the parallel machine of distributed storage.

**Results:** When the total number of individuals was within 6400 to 64000, the speed-up ratio of the algorithm in this paper to the original serial algorithm exceeded 20 times and the speed-up effect was obvious; when the total number of individuals was 25600, the algorithm in this paper achieved the maximum speed-up effect, and the maximum speed-up ratio of three test functions was up to approximately 25 times.

**Conclusion:** The design has a high parallel speedup ratio, which greatly enhances the speed of molecular conformation search on the premise of guaranteeing the accuracy and effectiveness of pharmic molecular docking.

**Method:** To investigate the effect of fitness running on female students’ body composition.

**Methods:** A total of 30 female college students were selected to accept fitness running exercise for 3 times a week and a total of 16 weeks. The body weight, waist circumference and body fat percentage were recorded and compared before and after the experiment; the cardiac structure and function and aerobic capacity of the students were tested.

**Results:** The body weight, waist circumference and body fat percentage of the students after the fitness running were significantly lower than before the experiment (p < 0.05);
Conclusions: Fitness running can improve the body morphology, and has a positive effect in lowering body weight and reducing fat accumulation.

HHME16-G06
RESEARCH OF EFFECT OF FITNESS RUNNING ON FEMALE STUDENTS’ CARDIO-PULMONARY FUNCTION
Leng L.
Wuhan Sports University, Wuhan, China

Objectives: To investigate the effect of fitness running on female students’ cardio-pulmonary function.

Methods: A total of 40 female college students were selected to accept fitness running exercise for 4 times a week and a total of 20 weeks. The vital capacity and forced vital capacity rate of one second(FEV1.0/FVC) were recorded and compared before and after the experiment.

Results: The lung function indices vital capacity and FEV1.0/FVC increased somewhat, the vital capacity increased by 153.4 ml, and the FEV1.0/FVC increased by 6.18%. Significant difference was found when compared with before the experiment ($p < 0.01$);

Conclusions: Fitness running has a favorable effect on enhancing the lung function.

HHME16-G07
INVESTIGATION ON THE CURRENT SITUATION OF PHARMACEUTICAL ENTERPRISES AND MANAGEMENT SUGGESTIONS ON THE REFORM OF SUPPLY SIDE
Zeng J.
Guangdong Pharmaceutical University, Guangdong, China

Objectives: To understand the current situation and trend of the development of pharmaceutical enterprises in China, and to promote the innovation of management mode of them on the reform of supply side.

Methods: (1) the production data of the pharmaceutical industry from 2005 to 2015 were summarized. (2) the development trend of China’s pharmaceutical enterprises was summarized through interviews with 200 pharmaceutical enterprises.

Results: (1) from 2005 to 2015, the average annual gross industry of China’s pharmaceutical industry growth of 16.73% over the same period, GDP is about 4.19% higher; the income of the total amount of drug production of pharmaceutical industry in 2 trillion and 770 billion; (2) the development of pharmaceutical enterprises in our country at the present stage shows 6 trends: the pharmaceutical industry closely integrated; flexible drug manufacturing supply; low carbon environmental protection production, and digitalization and information.

Conclusions: The management innovation of Chinese pharmaceutical enterprises should focus on the following aspects: (1) paying attention to resource constraints; (2) considering the relevant policies; (3) choosing their own development model.

HHME16-G08
OBSERVATION OF A NEW TARAXACUM SPECIES FROM NORTHEAST CHINA
Zhao X., Ning W.
Shenyang Agricultural University, Liaoning, China

Objectives: To prove a new taraxacum species from Northeast China.

Methods: Comparing taraxacum antungense Kitag with the unknown species on main morphology characters. Observing pollen morphology by scanning electron microscope.

Results: The main difference between the two species is that, the new species has tomentellate leaf, smaller inflorescence, and the achene 2.4-2.6 cm long, with beak base 0.8 cm, the ratio of beak base and achene length 1/3, but the known species (Taraxacum antungense Kitag.) with smooth leaf surface, bigger inflorescence, and the achene 3.0-3.5 cm long, with beak base 0.5 cm, the ratio of beak base and achene length 1/7.

Conclusions: Comparing the unknown species and Taraxacum antungense Kitag. in plant morphology and pollen morphology, we identified that the unknown species is a new species.

HHME16-G09
THE EFFECT OF VETERINARY DRUG RESIDUES ON ANIMAL FOOD SAFETY
Wang W., Su X.
Chinese Academy of Agricultural Sciences, Beijing, China

Objectives: To study the effect of veterinary drug residues on animal food safety.

Methods: The harm of veterinary drug residue was analyzed through literature review.

Results: Long term excessive consumption of veterinary drug residues in animal food will cause the human body a variety of acute and chronic poisoning, induce the production of drug-resistant strains and cause allergic reactions, as well as carcinogenic, mutagenic and mutagenic effects.

Conclusions: Relevant departments should strengthen the monitoring of veterinary drug residues and improve the detection method of veterinary drugs.

HHME16-G10
ANALYSIS ON THE INFLUENCE OF PUBLIC SPORTS CURRICULUM PROVISION ON PHYSICAL HEALTH OF COLLEGE STUDENTS MAJOR IN NON-SPORTS RELATED SPECIALTIES
Mao Y.
Northwest University of Politics & Law, Shaanxi, China

Objectives: To investigate the influencing factors of public sports curriculum provision on students’ physical health.

Methods: The tracking study was carried out on physical health of over 20,000 college students of the 2012 session major in non-sports related specialties from 5 universities in Henan during freshman year to junior year. The indexes included body height and mass indexes, vital capacity, muscle explosive force of upper and lower limbs, abdominal muscle endurance and cardiovascular respiratory system function.

Results: (1) The items in public sports curriculum presented a decreasing tendency from freshman year to junior year, the items in sports optional curriculum were on the decrease from freshman year to junior year; (2)During the freshman year, the public sports curriculum was in the initial stage, and the percent of pass in physical fitness test was relatively low; during the sophomore year, the percent of pass in physical fitness test was significantly enhanced after a year of exercise training in public sports curriculum; during the junior year, the weekly exercise time reduced due to the reduction of public sports curriculum, and the physical health condition of students decreased significantly.

Conclusions: The public sports curriculum is one of the key factors influencing physical health of middle school students and should be reasonably arranged during freshman year to junior year to improve the physical health of college students.
HME16-G11
RESEARCH ON HEALTH MANAGEMENT OF LONG-DISTANCE RUNNERS DURING PRE-COMPETITION TRAINING

Zhu J.
Zhengzhou University, Henan, China

Objectives: To monitor the muscular soreness index and biochemical index of long-distance runners during pre-competition training, and to carry out health management by massage, hot compress and nutrition guidance, so as to optimize the runners’ physical state.

Methods: The collection of basic information of roller skating athletes was carried out during pre-competition training. The electrocardiogram was monitored and the urine creatine kinase measured once every 7 days. Based on the above, pre-competition training was adjusted and health intervention carried out by massage, hot compress, nutrition guidance, etc.;

Results: In terms of the muscle soreness index, the pre-competition health consultation showed that the athletes had no muscle soreness. In 8 days after the training, the muscle soreness index rose, and the symptom of slight soreness appeared. In 16 days after the training, the symptom of muscle soreness became more obvious. After a week of health intervention, the muscle soreness index decreased somewhat.

Conclusions: Timely massage, hot compress and nutrition guidance for athletes can effectively improve the exercise induced fatigue of athletes, and has certain protective effect on the skeletal muscle micro-injury.

HME16-G12
ANALYSIS OF KAP SURVEY ON DIETARY NUTRITION OF ADOLESCENT ATHLETES IN SHAANXI PROVINCE

Yin T.T.
Northwestern Polytechnical University, Shaanxi, China

Objectives: To learn the status of nutritional knowledge, attitude and practice (KAP) for adolescent athletes in Shaanxi Province.

Methods: A total of 92 adolescent athletes (52 males and 40 females) were selected as objects of the survey. The questionnaire of dietary nutrition of athletes was designed independently according to the KAP model of nutrition education, then the questionnaire survey on the athletes was made.

Results: (1) The average score of nutritional knowledge was (47.08 ± 12.60) points (failed), and the weakness of knowledge was mainly embodied in the sources of three major nutrients and vitamins and sport nutrition; (2) The average score of nutritional attitude was (87.70 ± 7.40) points (excellent), and the overall nutritional attitude of the athletes was favorable; (3) The average score of nutrition practice was (73.94 ± 10.52) points (good), the athletes had problems of imbalanced intake of multiple nutrients, improper snacks and unreasonable time for three meals; (4) Significant correlation existed between the nutritional knowledge-attitude (K-A) and nutrition attitude-practice (A-P) (p < 0.05);

Conclusions: (1) The nutrition knowledge mastering situation of adolescent athletes in Shaanxi Province is not optimistic, but the athletes have positive nutrition attitude. The intensity of propaganda and education of sports nutrition needs to be enhanced and the effective nutrition intervention measures should be taken, so as to provide support for the formation of reasonable nutrition concept; (2) It’s suggested that the mess hall shall increase varieties of food supply according to the actual situation, improve the volume of food supply on rest days, guide the athletes to have extra meals scientifically and correctly lead the snack behavior of the athletes.

HME16-G13
RESEARCH ON THE CORRELATION BETWEEN EXERCISE BEHAVIOR AND HEALTH LEVEL OF COLLEGE STUDENTS

Yan B.H.
Northwestern Polytechnical University, Shaanxi, China

Objectives: To investigate the correlation between exercise behavior and health level of college students.

Methods: A total of 6230 college students major in non-sports related specialties in different grades in Shaanxi Province were randomly selected. The questionnaire survey of sports health consciousness and behavior was carried out, and the contents of the questionnaire included exercise time, exercise content, physical and mental health levels.

Results: Physical exercise of moderate intensity for moderate time can significantly promote the college students’ physical and mental health; physical exercise of high intensity for moderate time had no significant effect on college students’ physical health, and positively promoted the students’ mental health; physical exercise of moderate intensity for long time had a negative effect on the physical health, but positively promoted the mental health; physical exercise of high intensity for long time exerted a negative effect on college students’ physical and mental health.

Conclusions: College students should carry out physical exercise of moderate intensity for moderate time to guarantee the health level.

HME16-G14
ANALYSIS OF THE EFFECT OF INTERNAL TITANIUM PLATE FIXATION IN TREATING DIFFERENT TYPES OF MANDIBULAR CONDYLE FRACTURES

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Objectives: To analyze the effect of internal titanium plate fixation in treating different types of mandibular condyle fractures and the factors affecting postoperative complications, so as to sum up experience for treatment of mandibular condyle fractures and better serve the patients.

Methods: Patients with mandibular condyle fractures who were performed internal titanium plate fixation in Ankang Hospital of Traditional Chinese Medicine in June 2015 were selected. The mandible panoramic radiograph, mandible plain CT, mandible sagittal CT and crano-jaw three-dimensional CT reconstruction of the patients were reexamined and compared before and after the operation. The patients were divided into three groups based on the locations of mandibular condyle fractures, namely, the intracapsular condylar fracture group, the condylar neck fracture group and the condylar base fracture group. The occlusion, mouth opening, facial nerve function and other recover conditions of patients in the three groups after the operation were retrospectively analyzed.

Results: Among the 105 follow-up cases, 15 cases had adverse post-operative occlusion recovery; 29 cases had screw loosening, no case had titanium plate rupture, 8 cases had zygomatic branch damage, 15 cases had damage of temporal branch of facial nerve, and 17 cases had restriction of mouth opening and affected side deviation of mandibular movement curve.

Conclusion: The anatomical operation ability, the individual variation of facial nerves, the wound infection, the inappropriate stress concentration, the position, number and fixation sites of titanium plates and screws, the intermaxillary traction and the restoration status of joint periarticular soft tissues are factors affecting complications of mandibular condylar fractures treated by internal titanium plate fixation.
HHME16-G15
STUDY OF AEROBIC EXERCISE INTERVENTION ON THE PHYSICAL HEALTH OF OBESE CHILDREN
Shi Q.
Xi’an Physical Education University, Shaanxi, China

Objectives: To investigate the effect of aerobic exercise intervention on physical health and partial metabolic indexes of obese adolescents, and to provide theoretical and practical information for the individual intervention program of enhancing physical health and improving metabolic status of obese adolescents.

Methods: A total of 248 middle school students of 12 to 16 years old in urban area were selected as objects of the study, and 218 of the students were overweight or obese. 10 weeks of aerobic exercise intervention was carried out on the students. The body composition, physiological function and physical fitness and the influence of partial metabolic indexes of the students were studied.

Results: Exercise intervention can lower the levels of TC and HDL-C, and increase the levels of 1/2hBG, FINS, 1/2hINS, Z2hINS, HOMA-IR and HOMA-β.

Conclusions: The 10 weeks of aerobic exercise intervention can effectively lower the obesity degree of overweight or obese adolescents.

HHME16-G16
RESEARCH ON THE HEALTH STATUS OF COLLEGE STUDENTS WITH INSUFFICIENT EXERCISES AND THE LONG-DISTANCE RUNNING EXERCISE INTERVENTION
Wang X.L.
Northwestern Polytechnical University, Shaanxi, China

Objectives: To analyze the health status of college students with insufficient exercises and the exercise intervention.

Methods: (1) A total of 170 college students with insufficient exercises were selected as the experimental objects through the questionnaire, with 70 male students and 100 female students. The age of the students was within 19 to 23, and the state of health of the students was investigated through the sub-health questionnaire; (2) 800-meter-long-distance running was adopted for exercise intervention, the experimental period was 17 weeks, and the state of health of the students was investigated through the sub-health questionnaire.

Results: (1) The number of students in sub-health status was 140 before the experiment, and the incidence rate was 82.4%; (2) The number of students in sub-health status was 98 after the experiment, and the incidence rate was 57.6%. The difference before and after the experiment was significant (p < 0.01).

Conclusions: (1) College students with insufficient exercises are generally in sub-health status; (2) Long-distance running has a rehabilitation effect on improving the sub-health status of college students with insufficient exercises.

HHME16-G17
STUDY OF MUSIC THERAPY INTERVENTION ON CHILDREN WITH SEPARATION ANXIETY
Yu L.
Shaanxi Normal University, Shaanxi, China

Objectives: To investigate the intervention effect of music therapy on children with separation anxiety.

Methods: Specific intervention was carried out on the separation anxiety behaviors of children newly enrolled into the kindergarten by means of music therapy. The therapy lasted for two weeks since the children entered the kindergarten, with a total of 8 times and 30 min for each time. The separation anxiety behaviors of the children were recorded daily, and the behaviors covered incapable of having meals normally, rejecting activities and unable to have normal afternoon nap.

Results: The anxiety behaviors were on the decrease with the implementation of intervention.

Conclusions: Music therapy intervention has a positive effect on children with separation anxiety.

HHME16-G18
RESEARCH ON THE CORRELATION BETWEEN ACADEMIC ACHIEVEMENTS AND MENTAL HEALTH LEVEL OF COLLEGE STUDENTS
Song H.Z.
Zhengzhou University, Henan, China

Objectives: To explore the influence extent of mental health factors on the academic achievements of full-time college students on campus.

Methods: A total of 300 students major in some specialty of some university in Zhengzhou were randomly selected as the research objects. The assessment tool adopted was a kind of self-rating scale (SCL-90), which is widely used in domestic and abroad in recent years to measure the psychosomatic symptoms. The academic achievements of the students were measured by the performance ranking in the last semester, namely, the top 30% were deemed as excellent students, the medium 40% as average students, and the last 30% as low-achieved students. All the valid data obtained was input into the computer, SPSS data files were established, and SPSS 13.0 was used for processing the data. The analysis of variance was adopted.

Results: There was a significant difference in the average total score of students with different academic achievements. A significant difference was found in the scores of somatization, interpersonal sensitivity and depression, and no significant difference was found in the scores of the rest seven factors. LSD back testing was carried out on the average total score and the scores of three factors of somatization, interpersonal sensitivity and depression of college students with different academic achievements, and it’s found that the average total score and the scores of the three factors of average students were significantly lower than those of low-achieved students, while excellent students scored higher than average students, but lower than low-achieved students, and the difference was not significant.

Conclusions: Among college students with different academic achievements, low-achieved students have the lowest mental health level, followed by excellent students, while the average students have the highest mental health level.

HHME16-G19
EFFECT OF GYMNASTICS TRAINING ON IRON METABOLISM OF AVERAGE COLLEGE STUDENTS
Xue F.
Northwest University of Politics & Law, Shaanxi, China

Objectives: To investigate the effect of gymnastics training on iron metabolism of college gymnastics athletes and average college students.

Methods: Of 80 college students (including 40 male students and 40 female students) were required to participated in aerobics exercise 3 times a week for 10 weeks. The changes in blood routine examination indexes were observed, and the changes in contents of iron metabolism relevant proteins were also observed.

Results: The content of iron protein increased after training (p < 0.05).

Conclusions: Gymnastics training will cause changes in contents of transferrin and ferritin.
**HHME16-G20**

THE EFFECT OF TEACHING STRESS ON THE MENTAL HEALTH OF COLLEGE TEACHERS

Zhu J.

Zhengzhou University, Henan, China

**Objectives:** To investigate the effect of teaching stress on mental health of college teachers.

**Methods:** A total of 165 in-service teachers in some colleges and universities in Shaanxi Province were surveyed by questionnaire.

**Results:** (1) There’s a close correlation between teaching stress, teaching work satisfaction and mental health of college teachers; (r values were respectively -0.217, 0.307 and -0.282, p < 0.01); (2) As a predictive variable, teaching stress has a significant predictive effect on college teachers’ work satisfaction and mental health; (r values were respectively -3.948 and 5.730, p < 0.001), and teaching work satisfaction alone also exerts a significant predictive effect on the mental health (r = -4.392, p < 0.001); work stress and satisfaction together have certain predictive effect on mental health (r values were respectively 4.954 and -3.370, p < 0.01), and work stress affects mental health by part of the mediating effect of work satisfaction.

**Conclusions:** The teaching stress of college teachers has a significant effect on the mental health, and the effect is exerted with work satisfaction as the mediator.

**HHME16-G21**

EXPERIMENT RESEARCH OF EXERCISE INTERVENTION IN COLLEGE STUDENTS WITH INSOMNIA

Liu B.

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**Objectives:** To investigate the effectiveness of exercise intervention in improving sleep quality of college students with insomnia.

**Methods:** A total of 200 students with insomnia major in non-sports related specialties in some university in Shaanxi were selected as objects of the intervention experiment, and randomly divided into control group and experimental group. The sleepy behavior intervention experiment of two months was carried out. Patients in the control group were given knowledge popularization lectures about sleep hygiene and health maintenance, while patients in the experimental group were also performed exercise intervention to sleepy behavior. Patients in the two groups fed back their recent sleep status in the 30 days after the intervention, and filled in the Pittsburgh sleep quality index (PSQI);

**Results:** In 30 days after the intervention, there’s a difference in the total score of PSQI of the two groups, and the difference was statistically significant ($\chi^2 = 5.333$, p = 0.000).

**Conclusions:** Exercise intervention can effectively improve the sleep quality of college students with insomnia.

**HHME16-G22**

EFFECT OF AN ACUTE BADMINTON EXERCISE ON BONE HEALTH OF FEMALE COLLEGE STUDENTS

Yang N.

Northwestern Polytechnical University, Shaanxi, China

**Objectives:** To investigate the effect of an acute badminton exercise on bone metabolism of female college students.

**Methods:** A total of 40 healthy female college students who met the experimental requirements were selected to accept an acute badminton exercise. The students took basic foot movements combinations of badminton as well as swing of the racket for practice. The exercise lasted for approximately 60 min; the contents of serum TPACP, Ca, P and AKP were recorded.

**Results:** After an acute badminton exercise, the contents of serum TRACP and Ca significantly increased compared with before exercise ($p < 0.05$), content of serum $p$ increased dramatically ($p < 0.01$), while the content of serum AKP decreased somewhat, but the difference was not significant ($p > 0.05$).

**Conclusions:** An acute badminton exercise can significantly stimulate the bone turnover of healthy female college students, and makes bone resorption greater than bone formation. An acute badminton exercise is not conducive to bone health.

**HHME16-G23**

EFFECT OF BADMINTON EXERCISE ON BODY FAT COMPOSITION OF COLLEGE STUDENTS

Zhang B.

Zhengzhou University, Henan, China

**Objectives:** To investigate the effect of badminton exercise on the body fat composition of college students.

**Methods:** A total of 100 college students with 50 male students and 50 female students were selected to accept the badminton training for 60 min each time, 3 times a week and a total of 12 weeks, and the percentage of body fat was recorded.

**Results:** (1) The body fat percentage of male students decreased somewhat, but there was no significant statistical difference ($p > 0.05$); (2) The body fat percentage of female students decreased more greatly than the male students, and a significant difference was found ($p < 0.05$).

**Conclusions:** Badminton exercise can effectively lower the body fat percentage of female college students, but its effect on male college students was not significant.

**HHME16-G24**

THE EFFECT OF BADMINTON EXERCISE ON THE CARDIO-PULMONARY FUNCTION OF COLLEGE STUDENTS

Bao J.

Northwest University, Shaanxi, China

**Objectives:** To investigate the effect of badminton exercise on cardio-pulmonary function of college students.

**Methods:** A total of 100 college students were selected to accept the badminton training of 12 months. The sedentary heart rate, vital capacity, forced vital capacity rate of one second (FEV1.0/FVC), MVV and VO2max were record before and after the experiment.

**Results:** (1) The sedentary heart rate of the students decreased significantly, and significant statistical difference was found ($p < 0.05$); (2) The vital capacity, FEV1.0/FVC, MVV and VO2max increased somewhat, and significant changes were found in statistics ($p < 0.05$).

**Conclusions:** Badminton exercise can effectively improve the cardio-pulmonary function of college students.

**HHME16-G25**

THE EFFECT OF BASKETBALL EXERCISE ON THE MENTAL HEALTH OF COLLEGE STUDENTS

Chen Y.Y.

Northwest University, Shaanxi, China

**Objectives:** To investigate the multi-dimensional effect of basketball exercise on the mental health of college students.

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**Methods:** A total of 23 students from Northwestern University who scored equal to or over 3 points in mental factor of SCL-90 were selected, and the sub-item form was adopted to carry out basketball exercise intervention experiment on the students.

**Results:** A highly significant difference was found in depression factor of the students (p ≤ 0.01), and a significant difference found in hostility factor (p < 0.05).

**Conclusions:** Basketball exercise intervention can promote the overall level of mental health of college students to have positive changes.

**HHME16-G26**

**INVESTIGATION ON THE SITUATION AND CAUSES OF SPORTS INJURIES IN COLLEGE STUDENTS’ BASKETBALL EXERCISE**

Chen Y.Y.
Northwest University, Shaanxi, China

**Objectives:** To investigate the causes of common sports injuries in college students’ basketball exercise.

**Methods:** A total of 400 students who were injured in basketball exercise were studied by random sampling, and the sports injury relevant factors were analyzed.

**Results:** (1) The cause of injuries in 56% of the students was insufficiency preparation, other causes included site factors, fatigue and excessive load, which accounted for 44%; (2) the sports injuries occurred in extracurricular activities accounted for 65%; (3) 52% of the students had injuries in knee and ankle joints, 30% in phalangeal joints and wrist joints; (5) sprains accounted for 52%, straining for 30%, and contusion, tendinitis, fractures and dislocations together accounted for 18%.

**Conclusions:** The main cause of sports injuries in college students’ basketball exercise is insufficient preparation, the injuries easily occur in extracurricular activities, the injured parts mainly include knee and ankle joints, and the majority of the injuries are sprains and straining.

**HHME16-G27**

**RESEARCH ON THE CORRELATION BETWEEN COLLEGE STUDENTS’ LEARNING BURNOUT AND MENTAL HEALTH LEVEL**

Song H.Z.
Zhengzhou University, Henan, China

**Objectives:** To investigate the correlation between learning burnout and mental health level of college students.

**Methods:** A total of 300 students major in some specialty in some university in Zhengzhou were randomly selected as the research objects. The assessment tool adopted was a kind of self-rating scale (SCL-90), which is widely used in domestic and abroad in recent years to measure the psychosomatic symptoms. The academic achievements of the students were measured by the performance ranking in the last semester, namely, the top 30% were deemed as excellent students, the medium 40% as average students, and the last 30% as low-achieved students. All the valid data obtained was input into the computer, SPSS data files were established, and SPSS 13.0 was used for processing the data. The analysis of variance was adopted.

**Results:** (1) The mental health factors and the total score of health were positively correlated with the three dimensions of learning burnout and the total score of learning burnout (p < 0.01). Compared to other dimensions of learning burnout, the dimension of feeling down has a high correlation with mental health factors and total score of health. (2) The regression analysis was carried out with the total score of mental health as the dependent variable, and three dimensions of learning burnout and the total score of learning burnout as the predictive variables. The result showed that the total score of college students’ learning burnout and the dimension of improper behavior have significant predictive effect on mental health.

**HHME16-G28**

**RESEARCH OF THE DIETARY NUTRITION REGULATION OF MALE COLLEGE ATHLETES AFTER EXERCISE TRAINING**

Yu T.T.
Northwest University of Politics & Law, Shaanxi, China

**Objectives:** To propose reasonable nutrition regulation intervention for somatic functions of male college athletes after exercise training.

**Methods:** A total of 60 college athletes were randomly selected and tracking study was carried out (males with average age of 21.07 plus or minus 0.25). The dietary nutrition intervention was regulated and implemented based on the periodical examination and timely feedback of body weight, body fat and hemoglobin.

**Results:** During the entire training cycle, the body weights were stable and had some increase, while the body fats presented a declining tendency month by month, meanwhile, the hemoglobin level showed a favorable increasing effect month by month.

**Conclusions:** In the condition of collective diets, the implementation of comprehensive medical supervision and regulation in all life process by means of sports medicine can exert positive influence on body effects and dietary nutrition guarantee of male college athletes.

**HHME16-G29**

**THE EFFECT OF REGULAR BADMINTON EXERCISE ON BONE METABOLISM INDEXES OF FEMALE COLLEGE STUDENTS**

Pan R.C.
Northwest University of Politics & Law, Shaanxi, China

**Objectives:** To investigate the effect of regular badminton exercise on bone metabolism of female college students.

**Methods:** A total of 80 healthy female college students who met the experimental requirements were selected and randomly divided into experimental group and control group. There was no significant difference in general data between students in the two groups. Students in the experimental group participated in badminton exercise for 60 to 120 min each time, 3 times a week and a total of 20 weeks. The bone metabolism and bone mineral density relevant indexes were recorded (p < 0.05);

**Results:** After 20 weeks of exercise, the serum TRACP content in the experimental group decreased more significantly compared with the control group (p < 0.05), while there was no significant change in other test indexes; the contents of serum PTH and blood fat CHO and TG in the experimental group decreased significantly compared with before exercise (p < 0.05), while the serum p content significantly increased (p < 0.05); the contents of serum TRACP and p in the control group significantly increased (p < 0.05), while other indexes had no significant changes (p > 0.05).

**Conclusions:** The 22 weeks of badminton exercise can significantly lower the contents of serum TRACP and PTH and blood fat CHO and TG of healthy female college students, but exert no effect on bone mineral density. It’s suggested that 11 weeks of badminton exercise can improve the bone metabolism indexes of healthy female college students to a certain extent.

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APPLICATION OF STIC TECHNOLOGY IN SCREENING OF FETAL CONGENITAL HEART DISEASE

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Aims: Due to the influence of various factors, prenatal routine two-dimensional echocardiography for the diagnosis of fetal congenital heart disease has some limitations, and now STIC technology combined with two-dimensional ultrasound detection is valued.

Methods: Our hospital collected 11036 cases of pregnant women to carry out prenatal fetal malformation screening. Voluson E8 GE instrument with two-dimensional ultrasound and three-dimensional STIC imaging, fetal STIC technology volume database acquisition and offline analysis of the part and the recording of two-dimensional ultrasound and STIC scan time. The follow-up results of congenital heart disease after autopsy or after birth.

Results: After the experiment, the results show that the two-dimensional echocardiography, STIC two-dimensional echocardiography diagnosis coincidence rate (95.79%, 98.95%) comparable; in screening for fetal congenital heart disease (n = 79), in the conventional ultrasound (n = 87) to (7.76 + 2.42) min and (9.68 + 2.13) cases per minute, with (0.78 + 0.56) min and (1.03 + 0.80) images per minute respectively, the difference was statistically significant (p < 0.05, p < 0.01); in different gestational weeks, image quality from data sets compared directly from two-dimensional echocardiography get.

Conclusions: So STIC technology shorten the test time than two-dimensional echocardiography heart, especially heart malformation fetal heart irradiation time is greatly reduced. More importantly, the two-dimensional echocardiography STIC technology can improve the detection rate and the diagnostic accuracy of fetal congenital heart disease.

REPAIR FUNCTION OF INJURY OF NEURONS IN RATS FROM LIPOSOME WITH PEGFP (N1) - BDNF GENE

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Aims: The aim is to make the BDNF gene eukaryotic expression plasmid pEGFP-N1 - brain derived neurotrophic factor by RT-PCR and gene cloning. Transfection of bone marrow mesenchymal stem cells (BMSCs) with liposome by recombinant plasmid (N1) - brain derived neurotrophic factor.

Methods: The construction of genetically engineered cells was examined by fluorescence microscopy and immunocytochemistry. It is necessary to observe that bone marrow mesenchymal stem cells can be stably transformed by the expression of BDNF protein in nerve cells or glial cells. The expression of pEGFP BDNF (N1) - BMSCs: first, rat bone marrow mesenchymal stem cells were isolated and cultured, and expand and rat bone marrow mesenchymal stem cells isolated and purified provide seed cells for experimental high purification. Plasmid transfection of bone marrow mesenchymal stem cells and liposome with recombinant plasmid (N1) - brain derived neurotrophic factor. Identification of BDNF by transfection of BMSCs with immunofluorescence microscopy. In plasmid transfection bone marrow mesenchymal stem cells 18 h, green fluorescence can be seen in pEGFP (N1) - BDNF group and empty vector pEGFP (N1).

Results: In anti-fluorescence microscope, GFP positive BMSCs was sixty percent, BMSCs was transfected immunofluorescence green fluorescence. It is BMSCs call about thirty percent, BDNF protein expression of transfected cells. From the immune cell chemical results, the transfected cells can express NSE.

Conclusion: The eukaryotic expression vector pEGFP (N1) - brain derived neurotrophic factor is constructed and confirmed by enzyme digestion and sequencing. Recombinant plasmid (N1) - brain derived neurotrophic factor gene was transfected into bone marrow mesenchymal stem cells and bone marrow mesenchymal stem cells transfected with liposome. We demonstrated that BDNF protein can be expressed by immunofluorescence. What is more, bone marrow mesenchymal stem cells can express neuron specific. Neural cells that indicate the differentiation of bone marrow mesenchymal stem cells through their own Secretary BDNF protein.

Aims: Gastrointestinal Road between quality tumor (GIST) is a has malignant potential of non-directed differentiation of Digest Road between leaves sex tumor, past by pathology technology means of limit, had was misdiagnosis for smooth muscle or neural source sex tumor, operation Qian diagnosis more difficult “recently with immune group of carried out, judge GST may derived from in the mesoderm of Canal between quality cell (intestinal cell” fava a, Ile), these tumor most less has structure protein expression, muscle moving protein negative or only Council stove positive, and electric mirror in the also rarely see muscle silk, so does not belongs to authenticity smooth muscle tumor “its most common of onset parts is stomach (60–170%), second is intestinal (20–130%), occasionally momentum.

Methods: Department film and peritoneal Hour cavity” GIST most for malignant, can through blood line and planting transfer to liver, Peritoneal and lung, parts, and lymph nodes transfer rare “with immune organization chemical, Electric mirror and the molecular biology technology constantly development and application, people on GIST research constantly in-depth gastrointestinal Road between quality tumors (GIST) is gastrointestinal road most common of between leaves source sex tumor, main by shuttle shaped cell, epithelial sample cell constitute; can occur esophageal to anal of any parts, to stomach and intestinal up see “original cancer gene c a kit mutation and platelet origin growth factor receptor gene mutation is its main of onset mechanism” its preliminary diagnosis main relies on image learn, for understand tumor occurred of source parts, Form, Size, Internal structure, And around near organ of relationship and has no distance transfer, situation is has help.

Results: But confirmed still needed relies on pathology learn and immune organization chemical CD117 protein had expression” paper main for GIST onset mechanism, Clinical features, Pathology features, Immune organization chemical, Image diagnosis and identification diagnosis.

Conclusions: multiple aspects of latest research progress for a reviewed, to further improve on GIST of awareness.

OBSERVATION OF CLINICAL EFFECT OF LAPAROSCOPIC APPENDECTOMY IN THE TREATMENT OF ACUTE APPENDICITIS

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Aims: Acute appendicitis is one of the most common acute abdominal diseases in department of general surgery, the incidence rate of which is high. A large number of prospective researches confirmed that the
laparoscopic appendectomy (LA) is better than traditional open appendectomy (OA) in many aspects. But there is little research on the clinical effect of LA.

**Methods:** Therefore, in order to explore and analyze the clinical effect of LA in general surgery in treatment of different types of acute appendicitis. Based on the brief introduction of relevant theories and techniques, the comparison between LA and OA is made in this paper. The data of 185 children with acute appendicitis are analyzed, including 85 children with LA (group LA) and 100 children with OA (group OA) in the same period, the operation time, postoperative anal exhaust time, hospitalization time, abdominal abscess, wound infection and intestinal obstruction cases of the group LA and group OA are compared, then the data are processed by SPSS 17.0 software, and the chi square test is used for statistical analysis.

**Results:** The results showed that LA has an advantage in shorting the time of anal exhaust, reducing hair cow abdominal abscess and wound infection for gangrenous and perforated appendicitis. The treatment effect of LA for different types of acute appendicitis is significant, it is worth promoting.

**Conclusions:** The experimental results proved that LA has the advantage in shorting the time of anal exhaust, reducing hair cow abdominal abscess and wound infection for gangrenous and perforated appendicitis. The treatment effect of LA for different types of acute appendicitis is significant, it is worth promoting.

**HHME16-G35**

**RESEARCH ON THE APPLICATION OF ORGANISM IMMUNE RESPONSE AGAINST IN THE BIOLOGICAL TREATMENT OF LUNG CANCER**

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**Aims:** Lung cancer is one of the most malignant tumors which is harmful to human health and life. According to statistics, there are about 1.3 million new cases of lung cancer increased every year. In most cases, the patients have been treated as an incurable disease or an incurable disease in the early stage. At present, the development of biological treatment of lung cancer is very rapid, especially the immunization therapy of lung cancer which has made significant progress and significant effect. As a new treatment mode, biological therapy plays an increasingly important role in the treatment of lung cancer.

**Methods:** Therefore, the application of organism immune response against in the biological treatment of lung cancer is researched in this paper. Based on the summary of the biological treatment of lung cancer in recent years, the domestic and foreign researches on the status and achievements of the biological immunization therapy of lung cancer are compared, and the current most popular immunization therapies are carried on detailed exposition, including tumor vaccine, adoptive immunity therapy, cytokine therapy and so on.

**Results:** In addition, the effectiveness of biological immunization therapy is proved by the actual cases of lung cancer treatment.

**Conclusions:** The breakthrough of biological immunization therapy has opened up a broader prospect for the treatment of lung cancer.

**HHME16-G36**

**STUDY ON THE GROWTH AND DEVELOPMENT OF ALKALOIDS AND ITS HARM TO HUMAN BODY**

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**Aims:** Alkaloids are organic alkaline substances existed in organisms, alkaloids mainly exist in plants, a plant may contain one or more. The alkaloid content is the decisive factor in the intrinsic quality of tobacco, tobacco physiological stimulation on stress, stress, and have important effects on tobacco aroma. Most tobacco alkaloid content is very low, but for the quality of tobacco is also crucial. Then a small amount of nicotine is highly toxic, can stimulate the body’s central nervous system, increase blood pressure, excitement, but a lot can inhibit the central nervous system, cessation of breathing and heart attack.

**Methods:** The alkaloid has two sides, this paper analyzes the effect of Alkaloid on growth of tobacco alkaloids and study the mechanism of alkaloid on growth of tobacco alkaloids and study the mechanism of alkaloid on growth of tobacco plant, tobacco physiological stimulation on strength, and the relationship between tobacco alkaloids and tobacco aroma, Yu Wei, mixed gas, was negatively related to stimulation of 4 indicators score. The nicotine conversion rate and sensory quality of cigarette was not significantly correlated. Nicotine has a great influence on the sensory smoking quality.

**Results:** 5 kinds of alkaloids and sensory evaluation of tobacco have significant correlation. Nicotine has a great influence on the sensory quality of smoking, and aroma, Yu Wei, mixed gas, was negatively related to stimulation of 4 indicators score. The nicotine conversion rate and sensory quality of cigarette was not significantly correlated.

**Conclusions:** The analysis of nicotine has certain reference and guidance to reduce the harm of the human body, according to the difference of alkaloid content in different leaf positions and different kinds of alkaloids and sensory smoking quality.

**HHME16-G37**

**THE EXPRESSION AND CLINICAL SIGNIFICANCE OF ENDOMETRIOSIS OF PTEN AND BECLIN1**

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**Aims:** Endometrial carcinoma is one of the most common malignant tumor of the female reproductive system, its incidence rate is rising, but the exact pathogenesis is not clear.

**Methods:** In order to solve this kind of medical problems, this paper introduced the BECN1 and PTEN two kinds of tumor suppressor genes, expounded their expression and significance in endometrial carcinoma, established the mathematical model of largest non-Gauss estimation method, studied the expression of two genes expression.
Results: And through the experiment, it’s found that the inactivation and mutation of BECN1 and PTEN two kinds of tumor suppressor gene inactivation, as well as the abnormal activation of Onco genes played an important role in the event of endometrial cancer.

Conclusions: so there is a positive correlation between BECN1 and PTEN genes.

HHME16-G38
THE RESEARCH OF THE ROLE OF BIOMEDICAL POLYMER IN PROTEIN MODIFICATION AND ADSORPTION MECHANISM

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Aims: Biomedical Polymers are a class of biocompatible and has a disease diagnosis and treatment and other aspects related functions of a class of polymer.

Methods: Due to the diversification and design polymer structure, it is possible to achieve a variety of features that can be used to modify and biomolecules modified biological materials, thus improving their biological properties.

Results: Lysozyme was prepared by poly-N-isopropylacrylamide (LYZ-PNIPAAm) conjugates. Obtained on the graph initiator LYZ-Br molar ratio of initiator may be the regulation of the amino agent LYZ on by adjusting a small molecule.

Conclusions: (PU) surface prepared by physical blending lysine functionalized polyurethane, and confirmed the blend surface-modified PU fibrinogen (Fg) adsorption capacity decreased by about 95%, showing good exclusion of non-specific protein adsorption function.

HHME16-G39
APPLICATION OF ADHESIVE HOLLOW MICRONEEDLE ARRAY FOR DRUG INJECTION

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Aims: Owing to its small size and scale, an adhesive hollow microneedle array is used mainly to puncture the skin rather than access the deeper structures of the skin during drug injection. Thus, an adhesive hollow microneedle array for drug injection can facilitate highly efficient tracking and analysis of transdermal drug delivery and biological sampling, which has a wide variety of potential applications.

Methods: However, limitations such as inadequate strength and rigidity may lead to mechanical faults, buckling, or other safety issues, which may seriously affect large-scale clinical use of adhesive, hollow microneedle array for drug injection.

Results: In this study, damage to the skin was analyzed to determine the puncture strength of the adhesive, hollow microneedle array. The influence of surface and geometrical parameters of the microneedle array on the mechanical properties of puncture strength were also analyzed.

Conclusions: The results suggested an optimal design range for the angle between the curvature and tip radius of the adhesive, hollow microneedle array for drug injection, within which its mechanical properties can be considerably improved.

Acknowledgement: This work is supported by the Low-Cost Fabrication of Bonded Hollow Microneedle Array and Its Application in Mobile Health Care (SYSU Lab Fund Project) Project number: 20150202; Low-Cost Fabrication of Safe and Painless Microneedle Array in Transdermal Drug Delivery (National Innovation Training Project) Project number: 201302008.

HHME16-G40
APPLICATION OF STATIC GEOMETRIC MODEL OF COMPLEX NETWORK IN PROTEIN MEDICINE

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Aims: At the end of twentieth Century, with the developing understanding of life science, people gradually realized the importance of exploring and studying the sequence and structure of protein and gene. In particular, protein medicine researches have positive significance for the development of human beings and the progress of gene in the future.

Methods: In view of this, in this paper, the static geometric model of complex network model in the application of protein in medicine was studied and analyzed. The static geometric quantities of proteins with different sequence lengths were analyzed, including the analysis of degree of distribution, the analysis of accumulation degree and the shortest path.

Results: The results showed that there were differences in the degree distribution of the protein of different length. The longer the sequence is, and the wider the range will be. In the complex network constructed by the energy method and the structure method, the protein accumulation degree of the same sequence length is different.

Conclusions: Therefore, the complex network established by the structural method can make the structure become more compact and can be used for the research and analysis of protein medicine application.

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HHME16-G41
STUDY ON PREVENTIVE MANAGEMENT OF VENOUS BACKFLOW OBSTRUCTION OF INFRAHYOID MYOCUTANEOUS FLAP

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Objective: To improve the survival rate of infrayroid myocutaneous flap by cutting off the short vein, anastomosing other veins, and preserving the variant back flow veins in case of venous backflow obstruction of infrayroid myocutaneous flap in the superior thyroid vein.

Methods: The same side of infrayroid myocutaneous flaps were used for immediate reconstruction after radical resection of oral cavity cancer in 58 patients, including 6 cases of infrayroid myocutaneous flaps in which short veins were cut off and followed by anastomosing them with others, and 52 cases with the pedicle of the arteries and veins. Of the 52 cases, which are designed to the external jugular vein and the thyroid superficial veins 2 vein veins in 5 cases, designed to the
surface veins and thyroid veins 2 vein veins were three cases to the one who thyroid vein veins 44 cases.

**Results:** All infrathyroid myocutaneous flaps completely survived in 37 cases (94.7%), while in one case approximately 5% of the distal part of myocutaneous flap was necrotic, who also survived after the necrotic tissue had been removed.

**Conclusions:** It is effective to deal with the venous backflow obstruction of myocutaneous flap by preserving the variant veins, such as the external jugular vein or facial veins, and cutting off the short veins followed by anastomosing other veins of infrathyroid myocutaneous flaps.

**Acknowledgement:** This work is supported by the Hunan Provincial Tumor orthopedic clinical medical technology research center construction project (2013TP4087).

**HHME16-H01**

**A META-ANALYSIS OF EFFECT OF L-CARNITINE ON LIPID LEVELS IN OBESE PATIENTS**

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**Objectives:** To analyze and evaluate the association between L-carnitine and lipid levels in obese patients by using the Meta-analysis and provide reference for the prevention of obesity.

**Methods:** A systematic search for related studies from CNKI, Wan Fang Data, SinoMed, CqVip, PubMed, EMBase and Cochrane Library was performed following the searching strategies. The quality of the included studies was assessed and a meta-analysis was conducted using ReVman 5.0.

**Results:** Reduction in the TG (WMD = 0.883, 95% CI = -0.230–1.980, Z = 1.560, p = 0.120), TC(WMD) = -0.060, 95% CI = -0.150–0.020, Z = 1.520, p = 0.130), and HDL (WMD = 0.040, 95%CI = -0.270–0.360, Z = 0.270, p = 0.790) between the intervention and control groups had no statistical difference; LDL reduction(WMD = 1.080, 95% CI = -0.560–2.730, Z = 1.290, p = 0.020) between the two groups had statistical difference.

**Conclusions:** L-carnitine could improve the LDL level of obese patients thus regulating the fat metabolism in obese patients.

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**HHME16-H02**

**A LOCAL FEATURE BASED BLURRING DETECTION FOR IRIS RECOGNITION**

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**Objectives:** Iris recognition is one of the most important biometric technologies. The recognition performance depends on the quality of iris images very much. In real applications, the captured iris images are easily blurred, which reduces the recognition accuracy seriously. This paper explores the detection methods of blurred iris images and tries to improve the recognition performance by excluding these blurred images.

**Methods:** In this paper, we propose a detection method of blurred iris image. Firstly, pupil is roughly localized by RST (Radial Symmetry Transform). Then several ROIs (Region of Interest) of iris and pupil edge region are selected to extract local features in both frequency and space domain. The extracted features of each iris image compose a feature vector with 32 indicators. Finally, SVM (Support Vector Machine) is used to separate the blurred iris images from ideal ones based on the extracted 32 dimensional features vector.

**Results:** The proposed method is experimented on a self-built database. According to our experiment, the proposed method can achieve 96.9% correct classification of blurred and ideal iris images, improving iris recognition performance in real applications.

**Conclusions:** The proposed method is effective in blurring detection for iris recognition. It can exclude blurred iris images and avoid possible misrecognition, improving the recognition accuracy.

**HHME16-H03**

**THE CONSTRUCTION OF MDR 1 EUKARYOTIC EXPRESSION VECTOR AND THE PREPARATION OF PCDNA3/P-GP MONOCLONAL ANTIBODY**

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**Objectives:** This research aims at producing anti-P-gp antibody which can be applied in the detection of MDR. Hopefully anti-P-gp antibodies may block out the P-gp biologic activity of MDR patients’ tumor cells and become a target drug for tumor therapy.

**Methods:** Four strains of hybridoma cell were constructed in this experiment by injecting BalbC mouse with the whole sequence of MDR 1 gene and 1 kb fragment eukaryotic expression plasmid through the method of groovy cell fusion, filtration of indirect ELISA and limited diluted cloning.

**Results:** It is found that the four strains of McAb have specific reaction with MDR 1 and the 4 strains of McAb also have specific responses with multidrug resistance protein.

**Conclusions:** Monoclonal antibody was prepared to be against multidrug resistance protein of tumor cell in this study. The monoclonal antibody can target the resistance protein which is produced in the process of chemotherapy, so the chemotherapy can be effectively carried out. This may provide an effective tool for the study of the biological activities, clinical diagnosis, clinical therapy and immune mechanisms of multidrug resistant proteins.

**HHME16-H04**

**APPLICATION OF INFLUENCE FUNCTION METHOD OF CONTROLLABLE FACTORS IN RICE TRANSGENIC MUTATION**

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**Objectives:** Based on the analysis on the influence function method of the controllable factors in rice transgenic mutation, and through combining the high-precision classification performance of support vector machine with the robustness of genetic algorithm, this paper will establish intelligent evaluation system model.

**Methods:** This paper determines the engineering parameters aiming at influence function method, summarizes the influence factors of rice transgenic mutation, selects training samples based on subjective reasons and objective factors, applies genetic algorithm to optimize SVM algorithm to conduct evaluation, and obtains a non-linear relationship between many factors, thus determining the parameters required by the project.

**Results:** Combined with project examples, and based on the sample data provided by practical engineering, combination between genetic method and SVM algorithm is applied, and the parameters determined
by the two methods are in good agreement, indicating that this optimization algorithm can excellently train parameters and meet the project needs. Using the parameters determined and influence function method to calculate engineering example can be in good consistency with the experimental data. The safety evaluation systems proposed are consistent with the theory.

Conclusions: The safety evaluation system proposed are consistent with the theory, providing new thought for further study on the application of influence function method of controllable factors in rice transgenic mutation.

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HHME16-H05
FEASIBILITY OF INFRARED SPECTROSCOPY FOR IDENTIFICATION OF CHEMICALLY CONTAMINATED TEGILLARCA GRANOSA
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Objectives: Combination of Infrared spectroscopy and Chemometrics methods was introduced to identify Tegillarca granosa contaminated by heavy metals Zn and benzo[a] pyrene.

Methods: Inhibiting antioxidant enzymes and the synthesis of detoxification proteins could be changed by the contamination of heavy metal and benzo[a] pyrene. These phenomena change the structures and concentrations of relevant biological molecules can be captured by IR spectra. Then, spectral information were carried out using standardized preprocessing followed by the Random Forest and Support Vector Machine algorithms. Correlation-based and Relief feature selection techniques were employed to select a subset of relevant features for use in model construction. Both chemometrics models performed reasonably on the basis of spectral recognition and prediction criteria.

Results: Combination of IR technology and Support Vector Machine method can obtain the result of almost 94% accuracy between the contamination of heavy metal and benzo[a] pyrene.

Conclusions: The infrared spectroscopic method supported by the chemometrics method can be used for the fast and reliable identification of Tegillarca granosa contaminated by different chemicals.

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HHME16-H06
STUDY ON THE SEGMENTATION TECHNOLOGY OF MEDICAL CBCT IMAGE IN LIVER ORGAN BASED ON FUZZY EVALUATION AND ANALYSIS
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Objectives: Conduct the clustering of factors according to the similarity of index, form a tie cluster with arbitrary shapes and input the research index in random sequence so as to accurately analyze the medical imaging technology.

Methods: The algorithm of fuzzy comprehensive evaluation, based on the principle that individuals of the same kind of things share greater similarity and individuals of different types have otherness, makes classification among the data or index that share greater similarity, establishes a clear category boundaries and works out the evaluation value of algorithm through the establishment of fuzzy factor set under the membership degree analysis.

Results: To realize the automatic accurate segmentation of liver organ in CBCT image during daily radiation therapy, and to ensure the precision and credibility of the probability map, probability map is established through 80 sets of selected CT images. For target cases, the initial outline of the liver is first obtained through chest rib map, then the gray features of the liver are analyzed, the associated tissues of liver are removed and registering is finally conducted through fuzzy evaluation and analysis method and liver probability map established.

Conclusions: The fuzzy evaluation and analysis method proposed in this paper can be applied to CBCT-based image-guided radiation system and PET. CT imaging system, can improve the accuracy of radiation therapy, and improve the efficiency of clinicians and oncologists.

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HHME16-H07
A NOVEL METHOD OF FEATURE EXTRACTION AND CLUSTERING FOR LUNG CT IMAGES
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Objectives: In this paper, to overcome the technological difficulties of medical image 3D construction, through the medical image feature extraction and clustering methods, the problem how to quickly display the three-dimensional information of medical image is solved.

Methods: According to the characteristics of medical image, the color, shape and texture features of the feature extraction are described in detail by using the preprocessed image. To extract medical image features, firstly the wavelet is transformed for the image pretreatment, and then it is feature selection by computing weighted stagger clustering. The features go through weight calculation and vector standardization, and feature parameter is gotten, so that three dimensional information can be constructed. Lung images can be reconstructed, and search automatically and capture the target of suspected nodules. Taking the lung CT image as an example, in order to highlight possible lung nodules in data field, this paper puts forward the feature extraction and clustering method based on the classification of suspected pulmonary nodules. Through this method, image is segmented in advance, a 3D data field is composted, then the 3D features are extracted, and at last classify the suspected pulmonary nodule based on rules and clustering.

Results: The CT lung image analysis of lung image feature extraction and clustering has been applied in 60 cases, and because pulmonary nodules are visible, doctors can directly diagnose pulmonary nodules in lungs of two-dimensional CT image with the help of lung 3D images.

Conclusions: The color, shape and texture features of feature extraction are analyzed in detail in this paper. The medical image feature extraction and clustering methods provide an effective way for the construction of 3D images, which offers a good reference and new ideas for the diagnosis of pulmonary nodules.

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HHME16-H08
A NOVEL METHOD OF DATA CHARACTERISTIC MINING AND ANALYSIS OF MEDICAL BRAIN CT IMAGE
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Objectives: Medical images included abundant characteristic information have been divided into data’s characteristic mining and de-noising processed data analysis by data mining and computer technology, and the characteristic extraction based on wavelet analysis is obtained, image data will be further analyzed according to cluster theory by de-noising processed images.

Methods: Taking brain CT medical image as the basic data, various factors affecting the image are analyzed, and based on these factors the brain CT image is preprocessed, with noise eliminating and image enhancement. In order to show multiple image information including the brain CT image color, texture, shape and other features, image information can be extracted, and the extracted image features can be classified from the perspective of data mining.

Results: The method ensures that the target points of the brain CT image are clearly visible, which is not only suitable for the normal image registration, but also for the disordered image registration. Wavelet analysis method has good organization ability to distinguish pixels with similar gray level belonging to different tissues in the image, and map them back to the image space, so that tissue extraction of intracranial space from CT brain images has a good effect and also can complete precipitation of white matter, gray matter and cerebrospinal fluid.

Conclusions: The cortex CT brain images are analyzed based on medical image database, to better achieve the required characteristics in data mining, extraction of non rigid registration and image segmentation technology. And the result shows that the accuracy rate is good, with high practical application.

HHME16-H09
ANALYSIS OF PREVALENCE AND CHARACTERISTIC OF DRY EYE IN PATIENTS WITH THYROID ASSOCIATED OPHTHALMOPATHY
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Objectives: To investigate the prevalence and characteristic of dry eye in patients with thyroid associated ophthalmopathy (TAO), and the discrepancy and characteristics of dry eye in different stages.

Methods: A total of 140 TAO patients were collected. Symptoms, Schirmer I test (Slt), tear break-up time (TUR) and corneal fluorescent staining (FS) were recorded. The patients were randomly divided into two groups as active and inactive period group according to the clinical activity score. The patients were divided into three groups as short, middle and long duration group according to the duration of the disease. The prevalence and characteristics of dry eye were analyzed.

Results: There were statistical differences in Slt, BUT and FS score (all p < 0.05). The prevalence of short and long duration were 71.28% and 50.91%, respectively (χ² = 5.961, p = 0.015), and there was statistical difference in FS score (p < 0.05), but there was no statistical difference in Slt and BUT (all p > 0.05).

Conclusions: The prevalence of dry eye in TAO patients is high, there are different in TAO active, inactive period and difference course.

HHME16-H10
EFFECT OF HEALTH EDUCATION PATHWAYS ON HOSPITALIZED DIABETICS: A META-ANALYSIS
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Objectives: To study the therapeutic effect of health education pathway on diabetic patients hospitalized by using the Meta-analysis.

Methods: The domestic main databases were searched, the quality of included studies which screened by certain standards was evaluated. The Review Manager 4. 2 software was used for analysis.

Results: Totally 18 references were included. The Meta-analysis showed there were significant difference between the health education pathway group and the traditional health education group in fasting blood glucose (FBG) (p < 0.0001), 2-h postprandial blood glucose (p < 0.0001), rate of patients’ satisfaction (p < 0.0001), rate of mastering knowledge of diabetes mellitus (p < 0.0001), hospitalization days, hospitalization expenses (p < 0.0001).

Conclusions: Health education pathway is better than traditional health education for diabetic patients. But, the quality of most references included in this review are low, higher quality studies are needed to confirm the results in the future.

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HHME16-H11
INFLUENCING FACTORS OF ANXIETY AND DEPRESSION IN PATIENTS WITH ORAL IMPLANTATION
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Objectives: To explore the influencing factors of anxiety and depression in patients with oral implantation.

Methods: A total of 300 patients with oral implantation were divided into two groups as negative emotion and group according to the Hamilton Anxiety Scale (HAMA) and Hamilton Depression Rating Scale (HAMD). The relevant factors influencing the negative emotions were analyzed by logistic regression analysis.

Results: There were 30 patients with negative emotions, the incidence was 10.0%. The HAMA and HAMD scores in the negative emotion group were significantly higher than those in the healthy group with significant differences (p < 0.05). Single factor analysis showed that the level of education, women, agriculture, own expense, introverted character, monthly income <1500, widowhood or divorce, working, student and staff member were in correlation with negative emotions before oral implantation. Multiple factor analysis showed that women, own expense, introverted character, monthly income <1500, widowhood or divorce, and staff member were the independent risk factors for negative emotions of the patients before oral implantation (p < 0.05).

Conclusions: Many factors can cause negative emotions in patients with oral implantation, in which women, own expense, introverted character, monthly income <1500, widowhood or divorce, and staff member are the independent risk factors for negative emotions of the patients before oral implantation (p < 0.05).
character, monthly income<1,500, widowhood or divorce, and staff member are the independent risk factors.

HHME16-H12
META-ANALYSIS ON ASSOCIATION BETWEEN OBESITY AND COLORECTAL ADENOMAS
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Objectives: To systematically evaluate the association between obesity and colorectal adenomas by using the Meta-analysis and provide reference for the prevention of colorectal adenomas.

Methods: The literature at home and abroad about obesity and colorectal adenomas were searched. The quality of the included studies was assessed using Newcastle-Ottawa Scale (NOS) and were analyzed with meta-analysis method by using Stata 12.0 software.

Results: Twenty-eight studies were included. The combined OR was 1.38 (95%CI 1.30–1.47, p = 0.000), which indicated that obese people was 38% higher in the prevalence of colorectal adenomas. I² = 43% (p = 0.009) showed that this meta-analysis had a moderate degree of heterogeneity. Dose-response relationship analysis also showed that high BMI could increase the prevalence of colorectal adenoma. Both gender and race did not have significant influence on the occurrence of colorectal adenomas.

Conclusions: Obesity increases the prevalence of colorectal adenomas, which suggests that obesity should be considered as a risk factor in colorectal adenoma screening.

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HHME16-H13
META-ANALYSIS ON THE RELATION OF OBESITY AND CORONARY HEART DISEASE
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Objectives: To systematically evaluate the relation of obesity and coronary heart disease by using the Meta-analysis and provide reference for the prevention of coronary heart disease.

Methods: The literature at home and abroad about obesity anthropometry indices and coronary heart disease were analyzed with meta-analysis method by using the software RevMan4.2.

Results: The pooled odds ratio (OR) values (and 95%CI) of body mass index (BMI ≥25 kg/m²), waist-hip ratio (WHR, male >0.90, female >0.80) were 2.49 (1.80–3.45); 5.14 (3.76–7.04) respectively; The weighted mean difference (WMD) values of WHR and waist circumference (WC) were 0.03 (95%CI: 0.02–0.04), 3.82 (95%CI:1.09–6.55) respectively; There was no significance in correlation between hip circumference and coronary heart disease.

Conclusions: BMI ≥25 kg/m² is a risk factor for CHD. All of Body mass index, waist circumference, and waist-hip ratio are not beyond the normal range, which will help to reduce the risk of coronary heart disease.

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HHME16-H14
META-ANALYSIS ON COMPARISON OF CLINICAL EFFICACY OF HEPATECTOMY VIA ANTERIOR APPROACH AND CONVENTIONAL APPROACH FOR THE TREATMENT OF GIANT LIVER CANCER
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Objectives: To systematically compare the clinical efficacy of hepatectomy via anterior approach and the conventional approach for the treatment of giant liver cancer.

Methods: A systematic search for related studies from Cochrane library, EMBASE, Web of Knowledge, CNKI, WanFang Data, SinoMed, CqVip, PubMed, EMBase and Cochrane Library was performed following the searching strategies. The quality of the included studies was assessed and a meta-analysis was conducted using RevMan 5.0.

Results: The results of Meta analysis showed that hepatectomy via anterior approach could reduce the volume of intraoperative blood loss, the blood transmission rate, the operation time, the mean time of hospital stay and the postoperative mortality and incidence of postoperative complications when compared with the conventional approach, furthermore, hepatectomy via the anterior approach could reduce the postoperative recurrence of giant liver cancer and had higher overall 1- and 3-year survival rates.

Conclusions: The safety of hepatectomy via anterior approach is similar to that of the conventional approach, while the short–and long-term efficacy are superior to those of the conventional approach.

HHME16-H15
REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IN COMBINATION WITH PAROXETINE FOR MAJOR DEPRESSIVE DISORDER
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Objectives: To observe the clinical efficacy of Repetitive transcranial magnetic stimulation (rTMS) in combination with paroxetine for major depressive disorder (MDD).

Methods: 68 patients with MDD were randomly divided into two groups, which is receive real or sham rTMS for three weeks. During the 6 weeks,paroxetine was used at a fixed dose of 20 mg/day for 68 patients. Seven sites were set to conduct assessment of efficacy and adverse events in this study.

Results: The Montgomery-Asberg Depression Rating Scale (MADRS), the 17-item Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Rating Scale(HAMA) scores in both groups were not large difference, but it was significantly decreased from baseline to the endpoint. The mean time-to-onset was earlier by 3 days in Real group. It was significant difference of the incidence of adverse events in both groups.

Conclusions: it was fast, effective and safe for MDD treated by Repetitive transcranial magnetic stimulation in combination with paroxetine. It may be beneficial to the patients with anxiety and somatic symptoms.
HHME16-H16
RESEARCH ON FASUDIL HYDROCHLORIDE IN THE TREATMENT OF CEREBRAL VAASOSPASM AFTER SUBARACHNOID HEMORRHAGE
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Objectives: To investigate the therapeutic effect of fasudil hydrochloride in the treatment of cerebral vasospasm after subarachnoid hemorrhage.

Methods: 80 cases of delayed cerebral vasospasm after subarachnoid hemorrhage patients were randomly divided into control group 35 cases and treatment group 35 cases. Treatment group: FSD 30 mg+5% GS 40 mL/time, 3 times/day; Control group: Nimodipine 8 mg/time, 3 times/day. Treatment condition of cerebral vasospasm after subarachnoid hemorrhage was detected by transcranial Doppler ultrasound.

Results: Both transcranial Doppler ultrasound velocity and the treatment efficient were not statistical difference (p < 0.05). Fasudil hydrochloride was not influence patient’s electrolyte and blood, urine, stool, liver and kidney function.

Conclusions: Fasudil hydrochloride was a kind of safe and effective drug in the treatment of delayed cerebral vasospasm after subarachnoid hemorrhage.

HHME16-H17
RESEARCH PROGRESS ON THE TREATMENT OF SEPSIS INDUCED MYOCARDIAL INJURY BY INTEGRATED TRADITIONAL CHINESE AND WESTERN MEDICINE
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Objectives: To review the recent research progress of the treatment of sepsis induced myocardial injury by integrated traditional Chinese and western medicine. The outlook of the treatment of sepsis induced myocardial injury by Integrated Traditional Chinese and western medicine is also prospected.

Methods: Refer to the literature at home and abroad.

Results: Treatment measures of sepsis induced myocardial injury by western medicine includes early recovery and appropriately control the volume of transfusion, hormone therapy, anticoagulation therapy, angiotensin receptor blockers, positive inotropic drug and vasoactive drugs, statins, ulinastatin, and so on. Treatment measures of sepsis induced myocardial injury by Chinese medicine includes relieving heat and toxic material, promoting blood circulation and removing blood stasis’s material and characteristics of traditional Chinese medicine therapy.

Conclusions: Traditional Chinese medicine combined with conventional western medicine on treatment of sepsis myocardial injury can reduce the plasma level of myocardial injury markers, improve hemo-dynamics, and helps to reduce inflammation reaction to some extent. It has broad clinical prospects and it is worth to promote.

HHME16-H18
RESEARCH PROGRESSES IN THE PATHOGENESIS OF THYROID ASSOCIATED OPHTHALMOPATHY
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Objectives: To review the recent research progress in the pathogenesis of thyroid associated ophthalmopathy.

Methods: refer to the literature at home and abroad.

Results: It is now considered as an organ-specific autoimmune disorder caused by immune imbalance. It may occur under the influence of antigen stimulation, environmental and genetic factors, followed by the activation of autoimmune T and B lymphocytes, then leading to a series of orbital inflammatory responses to extraocular muscles, clinically manifested as the extraocular muscle fibrosis, adipose cell proliferation, exophthalmos and so on. In this paper, the new progresses in the study of the pathogenesis of TAO are reviewed.

Conclusions: The pathogenesis of the TAO is still not entirely clear. Thyroid and ocular surface antigen immune cross reaction may be the pathogenesis of thyroid eye disease. Environmental and genetic factors are involved. Genetic factors may determine the susceptibility and severity of the disease, and environmental factors may determine the progress of the disease.

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HHME16-H19
THE EFFECT OF COGNITIVE BEHAVIOR ON ANXIETY AND DEPRESSION OF PATIENTS WITH ATRIAL FIBRILLATION
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Objectives: To investigate the effect of cognitive behavior on anxiety and depression of patients with atrial fibrillation.

Methods: Totally 102 patients who meet the standards were randomly divided into two groups, the patients in the control group were only given pharmacotherapy, and those in the trial group based were given additional intervention of cognitive behavior based on the pharmacotherapy. The levels of anxiety and depression between the two groups were compared before and after the intervention.

Results: There were not statistically differences in anxiety and depression between the two groups (p > 0.05) before the intervention. There were statistically significant differences in anxiety and depression between the two groups (p < 0.05) after the intervention.

Conclusions: The intervention of cognitive therapy based on the pharmacotherapy can improve psychological anxiety and depression effectively to the patients with atrial fibrillation. It is worthy of clinical application.
HHME16-H20
THE RELATIONSHIP OF N-METHYL-D-ASPARTATE RECEPTORS AND MAJOR DEPRESSION
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Objectives: To summarize the relationship of N-methyl-D-aspartate receptors and major depression, and make a brief discussion on the NMDA receptors as a potential target of antidepressive drugs.

Methods: Refer to the literature at home and abroad.

Results: N-methyl-D-aspartate receptor as iononic glutamic acid receptors, which is a kind of ligand gating ion channels with many allosteric regulation sites and high permeability, plays an important role in the cause of major depression disorder. The excessive activation of N-methyl-D-aspartate receptor was one of the pathophysiology of depression disorder.

Conclusions: Compared to 5-HT related drugs, N-methyl-D-aspartate receptor related drugs exhibit more effective and durable resistance of depressive in both animal experiments and clinical trials. Glutamic acid receptors especially N-methyl-D-aspartate receptors may be larger correlation with depression and it will become the important target in the future research.

HHME16-H21
CHANGES OF SERUM LEVELS OF MMP-2, MMP-9 AND ITS INHIBITOR IN NEONATAL INTRACRANIAL HEMORRHAGE
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Objectives: To reveal the change rule of the matrix metalloproteinase-2 (MMP-2) and matrix metalloproteinase-9 (MMP-9) in neonatal intracranial hemorrhage and its possible mechanism in neonatal secondary damage.

Methods: The amount of MMP-2 and MMP-9 in blood plasma in 60 neonates with intracranial hemorrhage (case group) and 20 healthy neonates (control group) was measured by ELISA.

Results: The amount of MMP-2 and MMP-9 in case group was significantly higher than of those in control group (p < 0.01). There was significant difference in levels of MMP-2 and MMP-9 between light type group, middle type group and severe type group (p < 0.01); there was significant difference in amount of MMP-2 and MMP-9 between different amounts of bleeding group (p < 0.01).

Conclusions: MMP-2 and MMP-9 are important factors of pathophysiological process in secondary injury after neonatal intracranial hemorrhage. Therefore, changes in amount of MMPs can be used as an important reference index of determine condition and prognosis.

HHME16-H22
INFLUENCE OF GASTRIC BYPASS ON CHANGES OF FREE FATTY ACID IN TYPE 2 DIABETIC PATIENTS
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Objectives: To study influence of gastric bypass on changes of free fatty acid in type 2 diabetic patients.

Methods: The parameters including free fatty acid, homeostasis model assessment of insulin resistance, fasting plasma glucose, 2-hr postprandial plasma glucose, glycosylated hemoglobin, and body mass index were detected in 30 patients with type 2 diabetes before, and 3 and 6 months after surgery, and 30 cases of healthy subjects were used as control.

Results: The values of free fatty acid, homeostasis model assessment of insulin resistance, fasting plasma glucose, 2-hr postprandial plasma glucose, glycosylated hemoglobin, and body mass index were significantly higher than those of the healthy subjects before operation.

Conclusions: Gastric bypass surgery can reduce the serum free fatty acid level of type 2 diabetic patients and thereby lessen their insulin resistance.

HHME16-H23
EFFECTS OF ENDOPHYTIC FUNGAL ELICITOR ON SUSPENSION CELLS AND HUPERZINE A SYNTHESIS IN HUPERZIA SERRATA
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Objective: To investigate the effects of an endophytic fungal elicitor on growth of suspension cells and synthesis of huperzine A (HupA) in Huperzia serrata.

Methods: During cell suspension culture, a fungal elicitor was added at the end of exponential phase into the culture solutions, and then the biochemical indicators of suspension cells were detected. The fungus for elicitor preparation was identified.

Results: The pH, activities of antioxidant enzymes (peroxidase, catalase) and key alkaloid synthase (phenylalanine ammonialase), and yield of HupA are all improved in culture solutions. The alkaloid yields after induction are up to 600.36 µg/g FW, which is 3-fold higher compared with the control. The strain for elicitor preparation was identified to be a fungus belonging to Colletotrichum sp.

Conclusion: The fungal elicitor can alter the status of H. serrata suspension culture cells and cause the alteration of cell metabolic structure, thus improving the alkaloid yield.

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HHME16-H24
SEEK EXCELLENCE ON THE HOSPITAL QUALITY MANAGEMENT COMPETITION
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Objectives: hospital has been the government’s flagship, leading the health service reforms excellence and maintain a competitive advantage. In an uncertain environment, Medical examination, medication management, mobile monitoring, clinical care, health care, life characteristics, data records and other systems, significant correlation between hospital medical competition.

Methods: This research using a cross-sectional design, with all hospitals at all levels in Taiwan’s medical industry as the research object analyzed the impact of relevant institutional factors on hospital participation in the healthcare quality indicators project. According to viewpoints of system theory, This research with coercive forces and normative forces on behaviors adopted for management innovation and further inspected the impact of Mobile health services, physiological monitoring, mental health care, mental illness screening, etc. found that
management innovation activities on an Hospital quality management competition significant correlation.

**Results:** Coercive forces and normative forces significantly affect the behaviors adopted for management innovation in the medical industry, while the adoption of management innovation also affects the quality performance of hospitals.

**Conclusions:** This research found that the use of management innovation can significantly improve the quality performance of hospitals. Organizations’ implementation of management innovation activities has two implications in terms of management practices: first, management innovation improves an organization’s competitive advantage (Westphal, et al., 1997), and when management innovation is deemed necessary by environment, organizations in adopting management innovation can also obtain legitimacy, thereby affecting their performance; secondly, management innovation promotes the exchange of information and knowledge between the organizations, increases opportunities for mutual learning and thus significantly improves the hospital performance in inter-hospital quality management competitions and management and control of chronic disease hospitalization.

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**HHME16-IWHEM0002**

**COMPREHENSIVE ASSESSMENT OF LOW IMPACT DEVELOPMENT FOR URBAN STORMWATER CONTROL MEASURE - A CASE STUDY OF BIORETENTION**

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**Objectives:** Due to growing problems about low impact development (LID) such as bioretention and green roofs, becoming a common part of urban water environment protection. Comprehensive assessment of urban LID for stormwater control measure is very difficult. We conducted a comprehensive assessment on street-side bioretention basins to evaluate its overall performance in water quality, hydrologic properties and ecology aspect which characterized as carbon footprint values.

**Methods:** During the comprehensive assessment, set pair analysis (SPA) has been presented for evaluating bioretention performance, while analytic hierarchy process (AHP) is used to determine the weights of all indices. The value of the carbon footprint is calculated based on data collection and assumptions from previous studies.

**Results:** The bioretention systems in Australia perform “good” in five grades, which means the second-best grade after decade operation. However, it shows “moderate” in hydrologic performance while both “good” in water qualities and ecology aspect.

**Conclusions:** SPA is a rational model for the comprehensive assessment of urban LID. Considering about carbon emissions associated with LID, standard methods for predicting the carbon footprint should be developed and introduced into comprehensive assessment of LID. This study will provide a simple and useful guide for the comprehensive assessment in complex environmental systems.

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**HHME16-IWHEM0008**

**RESEARCH AND APPLICATION OF MULTI-OBJECTIVE OPTIMIZATION ALGORITHM BASED ON BIOLOGICAL BEHAVIOUR OF BEES**

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**Objectives:** The aim of this work was to improve the performance and accuracy of the parameter optimization method for the distributed, conceptual watershed Xinanjiang model through a Multiobjectives Parallel Artificial Bee Colony (MPABC) algorithm.

**Methods:** This paper utilized the parallel hierarchical model to solve parameter optimization problem of Xinanjiang hydrological model. This hybrid model has two levels: the upper level adopts multiple-swarms method to effectively ensure the population’s diversity and improve the accuracy of the algorithm and avoid falling into local optimum. The lower level utilizes the master-slaves method that using the Fork/Join framework to achieve intensively-computation task of the objective function calculation in the parameter optimization. The study area selected the west branch of the Heihe River watershed. The experiments involved data of daily rainfall, evaporation and runoff observations from January, 1990 to December, 1994. The Nash Sutcliffe Efficiency (NSE) was selected as the objective function for evaluating the runoff forecasting result. And the performance of MPABC was evaluated in comparison with the original serial ABC algorithm and the Parallel Particle Swarm Optimization (PPSO) and Parallel Genetic Algorithm (PGA).

**Results:** As the number of execution cores increases, the time difference between MPABC and serial ABC will be even greater, and the speed-up ratio could up to 8.43 (8 CPU cores). It indicated that the MPABC algorithm has better parallel performance and can effectively reduce the computation time. Compared with the PPSO and the PGA algorithms, the MPABC algorithm converges fastest and has the maximum average and the minimum standard deviation of the NSE value.

**Conclusions:** The experiments results showed that MPABC algorithm performs excellent in hydrologic model’s parameters optimization, and could significantly improve the computational efficiency and the optimal solution’s quality. Thus, the MPABC is suitable for solving the practical hydrological models’ parameters optimization problem.

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**HHME16-IWHEM0009**

**STUDY ON COSMIC RADIATION DOSE OF CIVIL FLYING PERSONNEL BASED ON MONTE CARLO METHOD**

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**Objective:** In order to estimate the exposure dose of the pilot during 2004–2014, and then carry out the scientific management of radiation protection work.

**Method:** With Monte Carlo simulation data establish earth’s cosmic radiation dose database, according to the route of flight, the airport and date information, using the Civil Aviation cosmic Radiation Dose estimate system (CARD) to calculate flight personnel radiation dose in one route one flight, thus to calculate the whole year’s dose.

**Results:** The radiation dose of 459 routes of an airline flight during the 2004–2014 has been calculated, the results have been shown the average annual dose of the flight personnel is 1.52 mSv, the smallest was 1.50 mSv in 2004, and the largest was 1.55 mSv in 2009. Through comparison has been drawn average annual effective dose of radiation and solar heliocentric potential into inverse proportion relationship.

**Conclusions:** The radiation dose which all flight personnel of the airline have gotten during the 2004–2014 has been in the international standard recommended limits.

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HIME16-IWHEM0015
RESEARCH ON TRAFFIC ASSIGNMENT MODEL OF URBAN AGGLOMERATION CONSIDERING ENVIRONMENTAL EFFECTS
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Objectives: To ensure traffic pollution problems are controlled optimally in traffic planning process of urban agglomeration, traffic assignment model of urban agglomeration is established by considering environmental effects.

Methods: First, the related content of urban agglomeration traffic environment was described and the influence of environmental factors in urban agglomeration traffic was analyzed. Second, the whole urban agglomeration traffic network was divided into internal city network and between-cities network, and by considering transportation of roadway, waterway, railway, and airway, the environment impedance functions were build up. On this basis, through the screening and monotonicity handling process, the impedance functions that meet the conditions of modeling algorithm were selected, and then traffic assignment model of urban agglomeration considering environmental effects was established. Finally, an instance of Huabei agglomeration was given to verify the effectiveness and scientific nature of the model.

Results: The results showed that when the environmental effects had been considered, the traffic volumes of entire comprehensive traffic network were more well-distributed without congestion on main channels of urban agglomeration. The proportion of four kinds of transportation mode channel was changed and part of traffic volumes shifted to most secondary transportation channels.

Conclusions: After considering environmental effects, the traffic assignment model of traffic agglomeration can not only tackle urban traffic pollution problems effectively, but also improve the rationality of spatial volume distribution with proportion of transportation modes of urban agglomeration, the results can provide technical support for sustainable development planning of urban agglomeration.

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HIME16-IWHEM0016
IDENTIFICATION OF SERUM APOLIPROTEIN A-I AS POTENTIAL BIOMARKER OF BILIARY ATRESIA BASED ON MASS SPECTROMETRY
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Objectives: Biliary atresia (BA) is a devastating cholestatic liver disease targeting infants. Current diagnosis depends on surgical exploration of the biliary tree. The aim of the present study was to identify potential biomarkers for the screening of BA.

Methods: This study recruited a total of 209 serum samples from 103 BA patients and 70 infants with non-BA neonatal cholestasis (NBANC) split into mining and testing sets. We aimed to screen for reliable protein biomarkers from matched serum samples based on mass spectrometry, followed by receiver operating characteristic (ROC), survival and hazard function curve as well as multivariate Cox regression analyses to ascertain their potential values as diagnostic and prognostic biomarkers for BA.

Results: We identified upregulated apolipoprotein A-I (apoA-I) with confirmation in an independent test set from a second hospital and minimization of systematic bias by pre-analytical parameters. The apoA-I protein had superior diagnostic ability in distinguishing between BA and NBANC. Moreover, the protein presented a more robust potential prognostic factor for BA than NBANC.

Conclusions: The apoA-I protein identified in this study presents an effective novel diagnostic and prognostic biomarker for BA, indicating that measurement of the peak intensity at 9387 Da in serum samples could facilitate improved early detection and estimation of postoperative survival prognosis for BA.

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HIME16-IWHEM0019
LOCATION PROBLEM OF NEW BLOOD STATION BY NOVEL GLOBAL HARMONY SEARCH
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Objectives: Location problem of new blood station is a branch of operations research and computational geometry concerned with the optimal placement of facilities to minimize transportation costs. This paper established model of location problem of new blood station, and solved novel global harmony search (NGHS).

Methods: Establish model. Suppose there have six hospitals, their positions and costs are listed: (1.25, 1.25, 3), (8.75, 0.75, 5), (0.5, 4.75, 4), (5.75, 5, 7), (3.6, 5, 6), (7.25, 7.75, 11). Here the first and second data denote coordinate, and the third data denotes costs. A new blood station will be located such that transportation costs are minimized.

Let the position of new blood station be (x1, x2). Then optimization model of this problem is following:

$$\begin{align*}
\text{min} & \quad 3d_1 + 5d_2 + 4d_3 + 7d_4 + 6d_5 + 11d_6, \\
\text{s.t.} & \quad \sqrt{(x_1 - 1.25)^2 + (x_2 - 1.25)^2} = d_1, \\
& \quad \sqrt{(x_1 - 8.75)^2 + (x_2 - 0.75)^2} = d_2, \\
& \quad \sqrt{(x_1 - 0.5)^2 + (x_2 - 4.75)^2} = d_3, \\
& \quad \sqrt{(x_1 - 5.75)^2 + (x_2 - 5)^2} = d_4, \\
& \quad \sqrt{(x_1 - 3)^2 + (x_2 - 6.5)^2} = d_5, \\
& \quad \sqrt{(x_1 - 7.25)^2 + (x_2 - 7.75)^2} = d_6.
\end{align*}$$

The NGHS algorithm includes two important operations: position updating and genetic mutation with a small probability. The former enables the worst harmony of harmony memory to move to the global best harmony rapidly, and the latter can effectively maintain population diversity and prevent the NGHS from trapping into the local optimum.

Results: Solving optimization model by NGHS. Thus x1 = 5.7283, x2 = 5.0355, and optimal transportation costs are 116,4994. Compared with results of LINGO and CVX, their optimal solutions are all x1 = 5.7279, x2 = 5.0414, and optimal transportation costs are 117,8554. So the results of NGHS are best.

Conclusions: Computational results show that the NGHS is an efficient method for solving location problem.

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Dust particles of high Ca content could stimulate the growth of bacteria, and irregularly shaped or thin dust may be easier to combine with bacteria.

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HHME16-IWHEM0039
DEGRADATION OF BISPHENOL A (BPA) BY OZONATION: PERFORMANCE, PRODUCTS, MECHANISM AND TOXICITY

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Objectives: This study focused on degrading BPA and controlling toxicity by ozonation.

Methods: A series of batch experiments were carried out to investigate the factors influencing BPA degradation by ozonation, including ozone dosage, initial solution pH, temperature, reaction time and common coexisting ions. Reaction pathways were proposed according to the determination of intermediate products and the toxicity variation during the BPA degradation process was evaluated by marine luminescent bacteria (V. fischeri).

Results: BPA degradation by ozonation was effective and rapid, with an initial BPA concentration 1.0 mg/L, ozone dosage 1.0 mg/L, initial solution pH 3.0 and temperature 25.0°C, completely BPA removal was achieved within 10 min. Nine intermediates were identified by GC/MS-MS and two possible pathways for BPA degradation were proposed, featuring a series of steps including dehydroxylation, cleavage of C-C bond, OH group addition, and oxidation. There was a rise tendency of toxicity within the first 5 min, which was caused by formation of more toxic intermediates, such as benzozquinone, hydroquinone, styrene, etc. With further degradation, toxicity was completely controlled by prolonging contacting time to 60 min.

Conclusions: Ozonation is an effective technology with good application prospect for removing BPA and controlling toxicity.

Acknowledgements: Supported by a project grant from “Shenzhen Science and Technology Project: Research on ozonation for removing brominated flame retardant from electronic industrial wastewater and controlling toxicity” (Grant No. JCYJ20160318093930497).
Methods: To verify the actual effects, the paper selects organic silicon resin, epoxy resin, and fluorocarbon resin as comparison groups and adopts different construction processes to make anti-corrosion treatment on steel fiber reinforced concrete sewage pipes. Both laboratory experiment and in-situ tests of sewage leakage and heavy metal contents in the surrounding soil are done to verify the corrosion protection effects of each treatment method.

Results: The medium salt spray test, leakage test and heavy metal contents test similarly indicate that the effect of cement-based permeable crystalline is better than those of organic silicon resin, epoxy resin, and fluorocarbon resin coating materials in the corrosion protection of reinforced concrete municipal sewage pipe.

Conclusions: Permeable active component and micro expansion component, the core parts of cement-based permeable crystalline coating materials, are endowed with self-repair capacity and permanent water-proof ability of reinforced concrete. Coating by cement-based permeable crystalline is an effective corrosion protection measure of the reinforced concrete municipal sewage pipe to avoid pollution due to sewage leakage.

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HHIME16-IWHEM2016
BIOCHEMICAL STUDY FOR PREPARING HIGH EFFICIENT FLUORESCENCE-ENCODED MICROSPHERES NOVEL METHOD WITH SEMICONDUCTOR NANOCRYSTALS
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Objectives: A novel method with two steps for preparing high efficiency fluorescence nanocrystals (NCs)-encoded micro spheres was developed. This biochemical research methods will be more widely used.

Methods: First, a series of polystyrene (PS) microspheres from 1 μm to 5 μm in diameter were prepared by dispersion polymerization; then, after a swelling process with CdSe NCs of different size the PS microspheres were encoded quantitatively. This method for fluorescence-encoding of microspheres was shown to have the following outstanding characteristics: (1) An emulsion containing CdSe NCs and swelling agents (chloroform) are firstly used for introduction of NCs into microspheres. (2) The embedded nanocrystals remain their original properties and they are not simply absorbed onto the surface of the microspheres. (3) The swelling process with CdSe NCs enabled to change the size of PS microspheres. (4) The prepared fluorescence-encoded microspheres could conjugate with proteins by some further surface modification, so they have a great potential to be applied to such fields as biochemistry, molecular biology, cell biology, immunology, etc.

Conclusions: It was shown the biochemical method could be operated easily and reproducibly.

HHIME16-NE10773
EFFECTS OF VARUS-VALGUS ROTATION ANGLE, POSTERIOR TIBIAL SLOPE AND PROSTHESIS SURFACE CONTOUR ON UHMWPE WEAR
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Objectives: The aim of this paper is to investigate the effect of varus-valgus rotation angle, posterior tibial slope and surface contour of prosthesis on the wear of knee prosthesis after TKA (Total Knee Arthroplasty) by simulating the wear of UHMWPE tibial insert.

Methods: Firstly, this paper built the model of knee joint after TKA in Solidworks based on the numerical model of normal knee and prosthesis. Then, the paper building the FE model of knee joint after TKA. In the FE model, the ligament was equated to nonlinear spring element. The gait load was applied on the model during the knee’s flexion motion. The gait frequency was 1 Hz and the number of gaits was from 0.5 million to 5 millions. The range of varus-valgus rotation angle was from 0° to 90° and a simulation test was set on every 2°. The range of posterior tibial slope was 0°-12° and a simulation test was set on every 3°. PS prosthesis and PCR prosthesis were used.

Results: Both varus-valgus rotation and posterior tibial slope would cause the wear of prosthesis increasing. The wear characteristics is symmetrical with the varus-valgus deviation angle. The wear depth of tibial insert increases obviously after 1 million cycles when the slope angle is 9 or 12°. The insert wear of PS prosthesis is worse than PCR prosthesis.

Conclusion: The rotation angle should be limited to 2° and the angle of posterior tibial slope should be limited to 6°. The wear of PCR prosthesis is smaller than PS prosthesis.
HHM16-NE10786
A NOVEL FRACTURE HEALING SIMULATION METHOD
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Objectives: This research mainly aimed at mechanics condition and biological factor to develop a dynamic model to simulate complex interactions of mechanical stability, revascularization and tissue differentiation in secondary fracture healing.

Methods: Fracture healing is a kind of repair process, which costs a lot of time. Multi-factors depending on each other in a complex manner have a significant influence on healing. Unlike previous study models, firstly, a three-dimensional finite element model was established to describe fracture callus mechanics based on tetrahedral units. The blood perfusion regarded as a spatio-temporal state variable was included into the model to simulate revascularization process. Combining finite element method and fuzzy logic, the dynamic model described the biological processes of tissue differentiation. Secondly, through the comparison result with the experiment data from the existing results, the simulation program and the modeling approach were verified. Finally, in order to evaluate how the predicted revascularization depended on the mechanical environment and how the axial stability influenced the fracture healing, this work simulated two different healing cases according to two groups of transverse metatarsal osteotomies in sheep.

Results: With the same mechanics and blood supply, the IFM error between the results obtained by the simulation and by the experiment was less 0.059.

Conclusions: The simulation results show fracture healing model is accurate and effective. The model can help doctors find optimal treatment.

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HHM16-NE10801
ORTHOGONAL OPTIMIZATION FOR ALCOHOL EXTRACTION OF EGG YOLK OIL
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Introduction: We proposed convenient ethanol extraction method to obtain egg yolk oil. The process parameters were optimized with orthogonal design (OD).

Methods: Egg yolk powders were dried by freeze-drying or ventilation-drying. Four different parameters of extraction and two levels were studied with the orthogonal array design of L8(42) (Table 1). The best solution was obtained by means of the oil yield and acid value in alcohol extraction.

| Variables |
|----------------|
| Drying method A | Temperature B | Ethanol concentration C | Solid-liquid ratio D |
| Freeze-drying | 80°C | 95% | 1:6 |
| Ventilation-drying | 90°C | 100% | 1:8 |

Results: The effect of the four individual factors was of the order of C>D>B>A according to the range analysis if oil yield only considered. The results revealed that the ethanol concentration was the most significant parameter. The optimum process for the extraction was determined to include an ethanol concentration of 100%, drying method of ventilation, temperature of 80°C, solid-liquid ratio of 1:8. That is to say, the best combination is A3B3C4D4. When acid value only considered, the effect of the four individual factors were of the order of C>D>B>A. The optimum parameters of extracting yolk oil were as follows: ethanol concentration 100%, drying method of ventilation, temperature 90°C and the ratio of material to solvent 1:6.

Conclusions: The effect of oil yield is more important than acid value, therefore, the optimum alcohol extraction process was established as follows: an ethanol concentration of 100%, drying method of ventilation, temperature of 80°C and solid-liquid ratio of 1:8.

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HHM16-NE10803
PREVENTING ENVIRONMENT PROBLEM BASED ON THE DECREASE OF ROCKFILL VOLUME CREEP
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Objectives: The application of artificial rockfill on the geotechnical engineering improves people’s living environment to some extent, however the secondary disasters caused with the rockfill go through large deformation will have a great influence on the environment. It is necessary to establish a reasonable rockfill creep model. Both the confining pressure and initial void can be controlled in practical engineering. Inspired by this, the paper established a rockfill volume creep model based on the void.

Methods: The paper focuses on the relationship between the volume strain and the void. The initial and minimum void were determined in this paper to solve the problem. The difference between them is the limit volume creep. The initial and minimum void change with confining pressure according the hypoplasticity model proposed by Erich, B. etc., the main method in this paper is based on mathematics.

Results: The model is developed that mainly consisted of four parameters, namely initial void, limit minimum void, confining pressure and solid hardness. Volume creep is very sensitive to the initial and minimum void.

Conclusions: The model can be determined simply and conveniently through the theory relationship proposed by this paper. By reducing rockfill volume creep, it is bound to avoid the secondary disasters and its environmental impact.

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HHME16-NE10819  
ANALYSIS OF THE BIOMECANICAL RESPONSE OF PEDESTRIAN TRAUMATIC BRAIN INJURY (TBI) UNDER THE FACIAL IMPACT  

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Objectives: In order to evaluate and predict biomechanical response and injury mechanism of the facial impact on pedestrian traumatic brain injury.  

Methods: With the combined computed tomography and magnetic resonance imaging, a finite element model for human head was developed based on Chinese head anatomic structure. Both the brain interface and the skull were modeled as a contact pair with a sliding boundary condition, the coefficient of friction was defined as 0.2. Six typical cases of facial traffic accidents were simulated. Also, the association of the TBI with its mechanisms following facial impact trauma was investigated.  

Results: Intracranial pressure, shear stress distribution and Von Mises stress were achieved. It is indicated that the lateral impact on zygomaticomaxillary bone produces the highest shear stresses of \( -28.67 \text{ kPa} \) and \( 25.46 \text{ kPa} \) while the base impacts on the mandible cause the brain tissues to shear greatly, which indicates a risk of severe TBI.  

Conclusions: It is proved the direction and site of facial impact play a crucial role in determining location of facial bone fracture and the severity of facial fracture. The facial structure dissipates the impact energy to protect the brain, reduce the risk of TBI.  

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**Results:** If air intake of one lung gets blocked, its suction duration will rise, and peak suction flow of the lung will decrease while the other lung will increase. With the rise of compliance of lung 1, the peak suction flow of lung 1 increases. The same goes for suction duration of the system. Oppositely, the peak suction flow of lung 2 decreases. It is on account of the effect of lungs coupling.

**Conclusion:** The compliance and the inlet diameter of lung 1 make a little difference between two lungs' pressure. They just change the rate of pressure. With the increase of these two parameters, the floating ranges of air flow increase, as well as the peak suction flow of lung 1. As coupling effect, the peak suction flow of the lung 2 decreases. The suction duration increases with compliance (C) increasing and inlet diameter decreasing.

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**HHME16-NE10838**

**PERCEPTION OF EXERCISE INTENSITY BASED ON P_REASONING WITH ECG, ECG AND RESPIRATION SIGNAL**

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**Objectives:** To assess the strength of human body movement, almost all the wearable devices use the method of comparing the variation of heart rate before and after exercise. However, this method is confronted with a big limitation for those special groups with diseases, such as arrhythmia. In addition, the wearable devices should also pay attention to low power consumption. Therefore, a new method must be raised to solve the problem of accessing the intensity of movement for the wearable monitoring system.

**Methods:** We designed a wireless portable system of physiological parameters acquisition and processing in line with IEEE802.15.4 protocol. This system improved method of extracting respiratory signal from ECG, proposed data compression algorithm for ECG, reduced amount of data transferred by collector and extended the life of battery. It also put forward a reasoning and identified algorithm to assess exercise intensity with single parameter, such as EMG, ECG or respiration signal, or the fusion of these parameters through P Reasoning theory.

**Results:** The amount of calculation is related to the number of physiological parameters involved in the algorithm of P reasoning, so the accuracy of movement assessment for special groups can be improved in the condition of fewer computational increase when using multiple physiological parameter and P reasoning method.

**Conclusion:** The method of using multiple physiological parameters and P reasoning algorithm to assess exercise intensity in wearable system can meet the power and accuracy requirements for wearable devices.

**HHME16-NE10853**

**PROTEIN ENGINEERING BY RANDOM MUTAGENESIS OF A NOVEL SERINE PROTEASE FROM UNCULTURED MICROORGANISMS FOR ENHANCED ENZYMATIC CATALYSIS**

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**Objectives:** This work aims to create a novel mutated enzyme from uncultured microorganisms with improved proteolytic activity via protein engineering method.

**Methods:** We explored a function-based screening method to identify novel protease genes from uncultured soil microorganisms. The detailed biochemical characterization of the interesting protein was performed. Error-prone PCR was performed with interesting protein to obtain mutants with increased proteolytic activity.

**Results:** A novel serine protease gene of sep1A (GenBank Accession No: KP202183.1) was characterized from uncultured contaminated agricultural soil microorganisms. The deduced amino acid sequence of sep1A gene shared moderate similarity to the peptidase family. A best mutated enzyme of Ep48 with improved proteolytic activity by enhancing its stability had been characterized with random mutagenesis method. Compared with the original Sep1A protein, the variant Ep48 protein, with the Gln307Leu and Asp391Gly changes, exhibited 2.62-fold activity at the optimal reaction conditions of 50°C and pH 9.0.

**Conclusions:** A best mutated enzyme of Ep48 with improved proteolytic activity had been identified with protein engineering method. This work provides a rational reference for genetic modification to optimize the pharmacological applications of proteases.

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MULTI-OBJECTIVE DRUG DESIGN USING GRAY THEORY, PHYSICAL PROGRAMMING AND PARTICLE SWARM OPTIMIZATION

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Background: In many fields of science and engineering, there are always multiple conflicting objectives, which are formulated as multi-objective (MO) optimization problems in order to minimize or maximize these conflicting objective functions simultaneously. New drug design (NDD) is an important MO problem for most pharmaceutical companies. In this work, the main goal of NDD is to achieve shape and color design process optimization of new drugs effectively.

Methods: Since the real NDD problem is considered as a non-linear optimization problem with a combination of the color, shape, and dosage variables, a multi-objective model is established on the principle of reducing the time and cost to bring a new drug to the market. First, A synthesized evaluation method, which is an evaluation principle of the computer-aided drug design system, was proposed to evaluate new drug development. Secondly, we use Grey Theory to build the correlation function about users’ emotional images to product drug schemes. Then we construct the Physical Programming model of multi-emotional shape and color design. At last, we applied the particle swarm optimizer to solve the physical programming model, and the optimal solution can be obtained.

Results: The shape, dosage and color design of cold capsule is taken as an example in this study, and it indicates that this method can effectively use the multi-objective information of users’ images and avoid the difficulty of setting all dimensional weightings. Thus, it can improve the engineering practicability of drug design theory.

Conclusion: This work constructs a multi-emotional shape and color design method for drug design based on Swarm Intelligence, Grey theory and Physical Programming. The proposed scheme is a novel approach for drug design based on computer-aided technologies.

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ARTIFICIAL BEE COLONY ALGORITHM FOR MEDICINE COLOR DESIGN

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Background: Artificial bee colony algorithm (ABC) is a relatively new optimization technique which simulates the intelligent foraging behavior of a honeybee swarm. Medicine color is one of the important factors for a patient is willing or disgusting. Pharmaceutical companies have realized that color design is essential to the success of a new drug. This work proposed an multi-objective optimization model for medicine color design, in order to assist pharmacists in new drug development.

Methods: An optimization model was developed to generate optimal color-combination schemes of in tablets and capsules based on the proposed hybrid multi-objective artificial bee colony algorithm (HMOABC). The proposed HMOABC extends original ABC algorithm to hierarchical, multi-objective and cooperative mode by combining the Pareto dominance and divide-and-conquer approach. With the concept of Pareto dominance, the flight direction of a bee can be determined and the nondominated solution vectors in external archive are maintained based on greedy selection and crowding distance strategies. HMOABC is then employed to search for color-combination schemes which can most closely meet the required image.

Results: We applied HMOABC on a two-colored tablet case to demonstrate the effectiveness of the medicine color design method. The simulation result showed that HMOABC-based color planning method could find good color-combination schemes which were closer to people’s image preferences, and the bio-inspired algorithm performed well for the medicine color-combination schemes searching problem, in terms of optimization accuracy and computation robustness.

Conclusion: The proposed algorithm is a novel approach for medical color design based on bio-inspired methods. In order to get a better optimization results, the future work will focus on how to set the parameters of the HMOABC to further optimize the medicine color design results.

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Aqueous Extract of Cornus Officinalis Fruits Weakens Depression-Like Behavior in Streptozotocin-Induced Mice

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Objectives: The fruit of Cornus officinalis (COF), widely used as a traditional medicinal herb in Eastern Asian countries, has been previously confirmed having anti-diabetic activity as well as enhancing central brain-derived neurotrophic factor (BDNF) expression. The present study aimed to observe anti-diabetic effects of COF aqueous extract (COF-AE) in streptozotocin (STZ) induced diabetic mice by involving BDNF, for the first time.

Methods: Male mice were administered COF-AE daily (50, 100 and 200 mg/kg, ig) or reference drugs FHMH [fluoxetine hydrochloride (FH, 10 mg/kg, ig) combined with metformin hydrochloride (MH, 100 mg/kg, ig)] for 3 weeks. The forced swim test (FST) was performed to observe depression-like behavior, and brain tissues were used for BDNF determination through enzyme-linked immunoassay (ELISA).

Results: STZ induced excessively elevated blood sugar and immobility time in FST, in manners weakened by COF-AE and FHMH administration. COF-AE treatments further increased BDNF levels in hippocampus of diabetic mice.

Conclusions: These findings indicate that COF-AE can weaken depression-like behavior in STZ-induced mice, and suggest its mechanisms may partially involve enhancing BDNF in brain.

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Conclusion: Such detection method can cover the defects of conventional wavelet method. Compared with pure wavelet method and conventional AR model detection method, this method is more suitable for outlier detection in biomedical domain. The actual detection accuracy and noise resistance meet the requirements of the biomedical field.

A Dynamic Outlier Detection Method of Biomedical Time Series

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Background: With the wide application of computer technology in the field of biomedicine, the accumulation of vast amounts of data contains a large number of valuable information. However, due to the signal fluctuation, environmental interference and other factors, the data does not reflect the true information, therefore a correct detection of outlier is the precondition and guarantee for above researches.

Methods: According to the concept of ‘sequence anomaly’, the AR model with simple structure and fast calculation speed is adopted to fit the time series; and then the wavelet method is used to decompose the fitting residual error, and the position of the outlier is accurately located at a certain frequency. Finally to avoid the setting of detection threshold and to detect outlier more accurately, HMM was adopted to analyze the difference of wavelet coefficients. In order to ensure the dynamic performance and robustness of the detection algorithm, this paper used a weighted updating method for objective function, so as to reduce the impact of outlier on parameter upgrading as much as possible.

Results: The validity and accuracy of the algorithm are verified by the model data and real data, and compared with the traditional wavelet method and AR model, it can be known that for noisy biomedical time series, the method has higher accuracy and lower false detection rate.

Conclusion: A new method which can deal with both outlier detection and change point detection in a unified structure. On the aspect of the detection performance, this method absorbs the advantages of ALARCON-AQUINO V and BARRIA J A’s method in simplicity and efficiency, and abandons the shortcomings of it that inaccuracy when the data are contaminated by outlier.

Photocatalytic Activity of TiO2-Based Films for Volatile Organic Compounds Degradation

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Objectives: Photocatalytic degradation of VOCs in air by TiO2 needs high intensity of ultraviolet irradiation, especially for low concentration of pollutants. Ultraviolet in sunlight accounts for only 4%, which greatly limits its use in sunlight. This paper focused on photocatalytic activity of Co/Er3+:Y3Al5O12/TiO2 films for VOCs degradation in order to improve the utilization of visible light.

Methods: The preparation of Co/Er3+:Y3Al5O12/TiO2 films was used sol-gel coating process. The processes of photocatalytic degradation of VOCs by Co/Er3+:Y3Al5O12/TiO2 films were kept track of by the In situ diffuse reflectance infrared Fourier transform spectroscopy. The degradation rates of VOCs were analyzed by TiO2-based films under the different doping mass fractions of Er3+:Y3Al5O12, Co and at...
different reaction temperature. And their model of photocatalytic degradation rate of VOCs was fitted by polynomial regression method.

**Results:** The changes of their infrared spectra showed that the photocatalytic degradation reaction of VOCs achieved stability in 40 min. When the doping mass fractions of Co, Er\(^{3+}\):Y\(_3\)Al\(_5\)O\(_{12}\) in TiO\(_2\)-based films were 1.81%, 12.03% separately, the photocatalytic degradation rates of VOCs were higher than by the others. The model of degradation rate constants of VOCs by CoEr\(^{3+}\):Y\(_3\)Al\(_5\)O\(_{12}\)/TiO\(_2\) films was:

\[
C_i = C_0 \times \exp[(1.455 \times 10^3 \times \exp(-3665.2T_i \times (-1.7083 \times [Er^{3+}] - 0.4099 \times [Er^{3+}] + 0.0109) \times -22.8571 \times [Co] + 0.0355)]
\]

**Conclusions:** In the simulated sunlight the photocatalytic degradation reaction of VOCs by Co/Er\(^{3+}\):Y\(_3\)Al\(_5\)O\(_{12}\)/TiO\(_2\) films conformed to the pseudo-first-order kinetics. The reaction rate constant could be quantified by the model at different reaction temperature and under different doping mass fraction of Er\(^{3+}\): Y\(_3\)Al\(_5\)O\(_{12}\), Co in TiO\(_2\) films, whose deviations were less than 15% with the corresponding experimental data.

**HHME16-NE10939**

**RESEARCH ON THE EXTERNAL SKELETON AND ITS HYDRAULIC DRIVE AND ELECTRO HYDRAULIC SERVO CONTROL SYSTEM**

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**Objectives:** In the field of military, medicine, the training device of medical rehabilitation of the lower limbs and auxiliary walking device, the weight bearing external skeletal has been a hot research topic. Therefore, the research of weight bearing external skeletal in the paralyzis physiological function recovery, stroke and spinal cord injury and for the elderly and the disabled field has very important practical significance. At the same time, the hydraulic drive bearing capacity is big and easy to be small, and has the good buffer function; therefore the hydraulic drive in the weight bearing external skeletal’s drive system has the function which cannot be substituted.

**Methods:** The paper focuses on determine the basic action of the external skeleton firstly, then, we carried out structural design including the design and drive of the joint mechanism, distribution and arrangement of the degree of freedom of motion. The objective was to simulate the function of the lower limb with the maximum degree of fit. Study on micro hydraulic servo technology from the point of dynamics was carried out at once. Hydraulic drive and electro hydraulic servo control technology and method were adapted in this paper. The mathematical model of the system was established by using the power bond graph and the model of the external skeleton in each movement stage was established. By using SIMULINK and 20-SIM, the model was joint calculated, simulated and analyzed.

**Results:** We set up the hydraulic position control circuit, and system control and control strategy analysis based on the combination of expert PID and advanced calibration network. We got the simulation structure of the flow and pressure of valve control cylinder drive system under different load and different fuel supply pressure and different motion modes. And during the micro hydraulic servo technology application in exoskeleton technology, we determined the electric hydraulic servo valve, hydraulic cylinder, electric parts, sensor and other important aspects’ key technical parameters, and effectively improved the micro hydraulic servo system stability and control precision.

**Conclusions:** According to combination control method, the design of the controller is capable to control the exoskeleton hydraulic drive and electro hydraulic servo control system effectively, and in normal walking, lower limb joint angle displacement can meet the requirements of the man-machine coordinated motion.

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**HHME16-NE10939**

**RESEARCH ON FAULT DIAGNOSIS OF POWER UNIT OF LARGE MEDICAL EQUIPMENT BASED ON FUZZY NEURAL NETWORK**

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**Objectives:** With the development of medical and health services and the development of medical engineering, large medical equipment has benefit to all aspects of medical diagnosis, to provide a precise means of diagnosis and treatment for the hospital. Large medical equipment in the application process is inevitable due to various reasons and failure. To repair the fault equipment and restore the function and performance of the equipment is the regular work of the equipment maintenance. Because the analysis of strengthening and maintenance of medical equipment failure can not only prolong the service life, to maximize the benefits, but also to ensure the correct rate of diagnosis, and improve the economic benefit of hospitals and the welfare of patients.

**Methods:** In the field of fault diagnosis, fuzzy logic and neural network technology in knowledge representation, storage, reasoning speed and overcome the ‘narrow stairs effect’ played a significant role, but knowledge representation and reasoning both significantly distinction. Fuzzy logic and neural networks are imitating operation mechanism of the human brain, neural networks can be considered focusing on the microscopic mechanism of the human brain, the human brain is the hardware equivalent to mimic human language and fuzzy logic techniques can be used to express the concept of brain macro function, rather software to mimic the human brain. Because of neural networks and fuzzy logic respective advantages and disadvantages, therefore, it is necessary to fuzzy logic and neural network together to form the neural network, complementary advantages, which is mainly manifested in both qualitative knowledge representations can have a strong self-learning ability and data processing capability.

**Results:** Under the condition of MATLAB software. To improve the operation speed and accuracy error, the need for training samples and test samples for data standardization. Standardization of sample data only for sample pretreatment index data to be mapped to the [0,1] characteristic value range. After processing and testing simulation, the result shows that the fuzzy neural network has reached the point of depth and detail to the fault diagnosis of the power unit of the large medical equipment.

**Conclusions:** This paper analyzes the large-scale medical equipment power unit fault diagnosis technology at home and abroad research status and fault diagnosis mechanism, focusing on the power system of large-scale medical equipment, established the fault sample fault phenomenon and its corresponding set. In view of the complexity and fuzziness of the fault of the power unit of the large medical equipment, the concept of fuzzy logic is introduced, and the fuzzy neural network is constructed and used for the fault diagnosis of the power system of the large medical equipment. Simulation results based on MATLAB show that the fuzzy logic is introduced into the neural network, not only on the input fault description of the phenomenon is more refined, but also have a clear explanation of the cause of the breakdown of output, more in line with the thinking habit of the people. In general, the future can be combined diagnosis by using fuzzy neural network and expert system, because the neural network has the feature of right brain intuition, expert system has the characteristics of realization of left logical thinking, therefore, fuzzy neural network is the main, supplemented by expert systems can achieve two complementary roles to bring new breakthroughs in fault diagnosis.

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RESEARCH ON ADAPTIVE FUZZY PID CONTROL OF MEDICAL ROBOT SPEED CONTROL SYSTEM

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Objectives: When the medical robot is running, the operating parameters and the state are vulnerable to interference of external factors, and it is difficult to establish the mathematical model, and it is difficult to correctly describe the system characteristics even if the mathematical model is established, when we change the mechanical speed control system to electronic speed control system, how to reduce the influence of nonlinearities, time variant factor factors and so on complex factors on the electronic speed control system in the process of medical robot running and achieving precise control is this research need to solve the problem. At present, the research of control theory and control algorithm is mainly to improve the traditional PID control algorithm, and find a method to avoid the unstable factor in the system caused by PID control. In the electronic control system of medical robot, the PID control is difficult to adapt to the nonlinear and time variant, and the change of the speed and load of the medical robot is frequent, so, only using PID control is difficult to compensate the instability to the system caused by parameters changes. The main purpose of this paper is that no matter how external factors change, we can still achieve electronic control to speed control system of medical robot by means of fuzzy PID control algorithm even under the condition of nonlinear interference, thereby enhancing the precise control of medical robot level, to ensure that the medical robot operates stably.

Methods: We adopt an adaptive fuzzy PID control algorithm. Then, the control principle of the adaptive fuzzy PID controller is analyzed, and the membership function, the fuzzy language variable and the fuzzy rules are determined. Under the condition of nonlinear disturbance, the control of the governor of the medical robot is realized by the adaptive fuzzy PID control algorithm, which can improve the precision control of the medical robot and ensure the stable operation of the medical robot.

Results: According to the experiment, the simulation includes the fuzzy PID control and traditional PID control, and the simulation waveform is shown in the corresponding figure. It shows that the response time of fuzzy PID control is far less than the conventional PID control, it can quickly reach the steady state, at the same time, the adaptive ability of the system is strong. So the fuzzy adaptive PID control has good adaptability and steady state performance.

Conclusions: This paper presents an adaptive fuzzy PID control method for the uncertainty and time variability in the speed control system of medical robot. The simulation comparison of the PID controller and the adaptive fuzzy PID controller shows that using the designed adaptive fuzzy PID controller can make the adjustment time of the system be shorter, and the response speed precipitate, improve the stability of the system.

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RESEARCH ON FAULT DIAGNOSIS OF LARGE MEDICAL EQUIPMENT BASED ON GA-BP NEURAL NETWORK

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Objectives: With the development of technology, especially the combination of traditional medicine and computer, the medical equipment has been greatly changed. The power unit of large medical equipment is developing in the direction of high performance, high precision and high complexity. Meanwhile, in order to meet the increasing functional requirements, the scale and complexity of large-scale medical equipment will be increased. Therefore, we not only need to improve the work performance of the power unit of large medical equipment, but also to enhance the degree of intelligence of the system. The large medical equipment power unit is mainly composed of the motor, which is the core of large medical equipment system, and provide the full power of large-scale medical equipment. In this paper, the genetic algorithm to the traditional BP neural network optimization, genetic algorithm global search ability and convergence speed and other characteristics, by repeatedly using the selection, crossover and mutation factor to the initial weights and thresholds of BP neural network optimization to obtain the optimal initial weights and thresholds, and then train the network, thereby increasing the accuracy and speed of neural network diagnostic failure. Achieve better fault diagnosis solutions.

Methods: Neural network is optimized by minimizing the initial weights and thresholds of the neural network. List all that were possible in the neural network in the presence of neurons, these neurons between all possible connection weights encoded into binary code string or real code string representation of the individual, randomly generated the code on the group, and then repeated using selection, crossover, mutation and other genetic operators on population genetic optimization calculation. The optimal weights and thresholds are brought into the neural network, and the average error of all training samples is calculated by the network, and the fitness of the individual is established. This method is simple and clear, but the amount of computation is large. When the scale of the neural network is large, the total number of weight connection coefficient is increased sharply, which leads to a sharp increase in the search space of genetic algorithm. This method is used to optimize the BP neural network, and the initial weights and threshold of BP neural network for real coded, through genetic manipulation, global search, in order to improve the initial weights and thresholds of the network, which can avoid the BP neural network into a local minimum value, accelerate the training speed.

Results: By comparing the error curve of BP network and genetic algorithm to optimize the BP network error curve can be drawn: genetic algorithm in the optimization process to achieve convergence speed, search path is short. The genetic algorithm by optimizing the initial network weights and threshold to optimize network. Encoding after repeated use of selection, crossover and mutation of the three genetic factors, the outstanding individual in the next generation. In the optimization process, the setting of control parameters has a significant influence on the optimization results. At the same time, the output results of the network are compared with the corresponding expectation. The results show that the optimized network can meet the requirements of the network.

Conclusions: In this paper, a genetic neural network is used to diagnose the fault of the power system of large medical equipment. Genetic neural network to solve the BP neural network’s inherent slow convergence speed and it is easy to fall into a local minimum value problem, so it can effectively and quickly identify faults of the power system of large medical equipment and has the advantages of high diagnosis accuracy and speed. We deeply study the basic idea and the specific method of genetic algorithm optimization neural network, and solve the problem of slow convergence and easy to fall into local minimum. Simulation experiments show that based on genetic neural network fault diagnosis results and the measured value has a good consistency, as long as the choice of a typical enough of the original fault samples to train the network, the network stability is good. Genetic neural network fault pattern recognition feature to take full advantage of information, maps the relationship between input and output, and an accurate diagnosis. It offers a new theoretical methods and techniques for condition monitoring and fault diagnosis, this fault diagnosis method can be used for the fault diagnosis of large rotating machine sets of large medical equipment, so it has a wide range of application prospects.

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THE RELEASE/ENRICHMENT MECHANISM OF URANIUM AND THORIUM DURING WEATHERING AND PEDOGENESIS OF CARBONATE ROCKS IN GUIZHOU, CHINA

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Objectives: Carbonate rocks are extremely poor in uranium and thorium. However, it has been reported that these two elements show notable enrichment in the soils developed on carbonate rocks. This study focuses on the ten soil profiles in the karst regions of Guizhou Province, China, and aims at revealing the release/enrichment mechanism of uranium and thorium during forming soils.

Methods: Research methods of the paper are as follows: the extraction of insoluble residues of carbonate bedrocks, the mass balance calculation and sequential chemical extraction of uranium and thorium, and the comparison of geochemical characteristics of uranium and thorium among the studied profiles.

Results: Uranium and thorium are mainly hosted in insoluble phase of carbonate rocks and their concentrations in this phase are even up to 40 times and 60 times more than those in the bulk rock. However, the mass percentage of insoluble residues in the bulk rock is very low (usually less than 5 wt.%), so the amount of uranium and thorium in insoluble residues of carbonate bedrocks is very low. The mass balance calculation results show that uranium is strongly lost but the loss of thorium is relatively weak during weathering of carbonate rocks.

Conclusions: During weathering of carbonate rocks, with the preferential dissolution of carbonate phase, uranium hosted in this phase is completely released by weathering fluid, but most of thorium hosted in this phase is precipitated in the residues. In the process of pedogenesis of the residues, uranium and thorium enriched in them display no further loss, but their occurrence modes have clear changes.

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ANTIDEPRESSANT-LIKE EFFECTS OF YUEJU WAN IN A MICE MODEL OF CHRONIC UNPREDICTABLE MILD STRESS

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Objectives: The purpose of this study was to investigate the possible mechanism of YJW improving depression.

Methods: Mice with depressive-like behavior induced by chronic unpredictable mild stress (CUMS), all mice were randomly divided into four groups, namely the control, model, YJW, and fluoxetine groups. The present study evaluate the antidepressant effects of YJW, an open field test (OFT), sucrose preference test and forced swim test were performed. The concentrations of monoamine neurotransmitters and metabolic products including norepinephrine (NE), 5-hydroxytryptamine (5-HT), dopamine (DA), 5-hydroxyindoleacetic acid (5-HIAA), homovanillic acid (HVA) and 3,4-dihydroxyphenylacetic acid (DOPAC) in the cerebral cortex and hippocampus of mice were determined by means of high performance liquid chromatography with electrochemical detection (HPLC-EC). The expressions of brain-derived neurotrophic factor (BDNF), nerve growth factor (NGF) in the hippocampus were measured by immunohistochemical staining analysis.

Results: CUMS caused a significant decrease in OFT, sucrose preference in mice and increase in immobility time in the forced swim test. And these depression-like behaviors were significantly improved by YJW. Moreover, YJW significantly increased the concentrations of NE in CUMS mouse prefrontal cortex and 5-HT in hippocampus, more over improved the BDNF, NGF expressions in the hippocampus, which was reduced in CUMS mice.

Conclusion: The results demonstrated that the antidepressant-like effect of YJW is mediated, at least partially, via the central monoaminergic neurotransmitter system.

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CONTEXT QUANTIZATION WITH THE OPTIMIZED DYNAMIC PROGRAMMING FOR THE COMPRESSION OF UN-REPETITIVE GENOME FRAGMENTS WITH BINARY-VALUED MAPPING

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Background: The context modeling based entropy coding scheme must tackle the ‘Context dilution’ problem. Context quantization is one efficient method by merging some counting vectors to reduce the size of the context model. Some existing optimized quantizers, such as MCEQ and MCLCQ, cannot always obtain ideal coding results with reasonable computational complexity. Actually, the clustering algorithm can help the implementation of context quantization under given similarity measure.

Methods: The similarity measure and the implementation of context quantization based on dynamic programming is discussed here. The derivations imply that the increment of the description length is the weighting of the relative entropy and it is symmetric, which implies that it is one possible similarity measure for context quantization. Then the dynamic programming is employed to implement the context quantization. Actually, this implementation can ensure the results to be global optimization. At the beginning of the context quantization, those counting vectors are initialized as the leaf nodes. The increment of the description length is suggested as the similarity measure which control whether neighboring nodes should be merged or not. After iterations, the optimized clustering results can be achieved.

Results: After many experiments, for images sources, the context quantization based on dynamic programming can obtain better results than MCEQ or MCLCQ. The coding efficiency can be improved almost 1.2%. For binary images, the improvement can reach to 1.16%. But the computational complexity of the proposed context quantization is lower more than the complexity from any other context quantizers.

Conclusion: The number of clusters can be obtained adaptively and the coding results can be optimized at the same time. The context quantization based on dynamic programming is better than other quantizers and the design objective is achieved.

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THE OPTIMIZED CONTEXT WEIGHTING METHOD AND ITS APPLICATION ON THE COMPRESSION OF THE UN-REPETITIVE FRAGMENT OF GENOME SEQUENCE
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Background: Recently, the ‘Referential algorithm’ can obtain unprecedented coding performance except for coding these un-repetitive fragment of genome sequences. In past researches, the entropy coding scheme with context weighting is suggested to enhance results. The performance of the context weighting is depend to the value of weights. However, the optimization of weights is not discussed any more before although the weights in some works are calculated by using some various methods.

Methods: The optimized context weighting and its application on compression for un-repetitive fragments are discussed. In essence, the context weighting is to merge some counting vectors into one proportionally by using the given weights. Considering corresponding description length, by derivations, the properties of context weighting can be observed that the description length of the counting vector weighted is equivalent to the weighting of the description lengths of counting vectors participated into weighting. When this linear equivalence is obtained, Least Square algorithm, can be employed to optimize the weights. Then this optimization is utilized to improve the compression efficiency of the un-repetitive fragment of genome sequences.

Results: Two aspects above are testified by sufficient experiments. The results indicate that the proposed method can obtain weights which leads to the minimum description length after weighting. Ten benchmark genome sequences, including VACC and CHNTXX, which contain little repetitive fragments respectively are compressed by using the proposed compression algorithm. Finally, the compression ratios of 6 genome sequences are better than the respective results from other existing genome sequence compression methods. The average coding results is enhanced almost 7% than any other existing algorithms.

Conclusion: The optimized context weighting can optimize the weights directly under the description length theory and the compression efficiency can be enhanced when it is used to compress the un-repetitive fragment of genome sequence. The design objective is achieved.

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TRANSPORTER ACTIVITY CHANGES OF DIFFERENT FRACTIONS OF COIX SEED ON THE FLUID RETENTION RATS
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Objective: Coix seeds (also known as Coix lacryma-jobi L. var. ma-yuenStapf and adlay seed) can fortify the spleen and disinhbit dampness in TCM. We treat the fluid retention Rats model with different component of Coix seed, to explore the most effective component for eliminating dampness.

Methods: In the preliminary study, we have established a fluid retention rat model (this method has been patented by the national patent office, No. 201410072183.8). The model was treated by coix seed detection and different isolated components (protein, fatty, polysaccharide and starch). Water loading, water drinking and urine volume were detected by metabolic cage experiment. Differential genes designated to the transporter activity function was detected by gene ChIP and screened by Quick-GO of EMBL-EBI (http://www.ebi.ac.uk/services). Results: We have found the water loading index increased in the model group (p < 0.01); Fourteen days after treatment, the water loading index was remarkably down regulated in coix seed decoction, protein and fatty group, with statistically significant difference compared with the model group (p < 0.05). Covariance analysis of water drinking and urine volume showed that the urine volume decreased in model group (p < 0.01); Fourteen days after treatment, the urine volume increase in the treatment group except starch group, the difference has statistic significant compared with model group (p < 0.05). The analysis of gene ChIP about transporter activity function showed protein, polysaccharide and decoction group can significantly improve the gene expression about water and salt transport in rat models, but fatty group had the weak effect. Fabp6, Slc51a, Slc5ib, Slc11a2, Slc4a10 and ApoJ genes play the major role.

Conclusion: Many components especially the protein component of Coix seed may be the mainly part of regulating fluid transport, and the mainly functional targets may be Slc gene family and AQP gene family.

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HHME16-NE11518
A CASE REPORT OF SUCCESS RESTORATION BY TOOTH HEMISECTION FOR THE MANDIBULAR FIRST MOLAR: 1.5-YEAR FOLLOW UP
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Objectives: To evaluate the clinical results of mandibular molar supported by half of the tooth after tooth hemisection.

Methods: A patient had accepted a porcelain fused to metal (PFM) restoration for his right mandibular first molar after root therapy for nearly one year. However, a gingival fistula occurred at the apical area of the tooth 1.5 years ago, not healing for a long time, and he felt pain when occlusal contact. There was a large area of low-density shadow around the mesial root of the right mandibular first molar under CBCT examination. Another post-core-crown restoration did not made until the fistula had disappeared completely and not recurred within 3 months after tooth hemisection. The occlusion was carefully adjusted. The patient was guided how to correctly maintain oral hygiene.

Results: With another 15 months follow-up, the gingival fistula of the mandibular first molar did not recur, and the function of the molar recovered well. There was no obvious mobility of the rest half tooth. X-ray examination showed that there was no enlarged low-density shadow around the root tip of the tooth and no bone absorption at the alveolar crest, the bone of hemisected part healed well.

Conclusions: In a strict sense, post-core-crown or full crown restoration after tooth hemisection seems a way of cantilever fixed bridge, which needs strict indication and careful occlusion adjustment. However, especially for those beset by economic factors who could not accept dental implant restoration at that moment, and do not want to injure the adjacent teeth either, this way of tooth hemisection combined with crown restoration for parts of failed root-therapy teeth is worth exploring and suitable for clinical application as a tooth preservation treatment method.

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Methods:
The analysis was based on behavior experiment data. Silhouette elements were studied as visual clues. Thus, the visual stimulus samples were female suit silhouette with different silhouette elements levels. Sensory words were used to induce subjects' emotional response in the behavior experimental processes to study sensory perception of subjects.

Results: Female silhouette elements that generate strong fusion in sensory evaluation, as well as the ways of strong fusion are different. Moreover, the main effect (strong fusion) of silhouette elements that affects sensory perception of female suit silhouette and the interaction effect (weak fusion) between elements function among different levels of silhouette elements, which suggest that the main effect and interaction effect carry different weights in sensory perception.

Conclusion: Based on the above research results as well as feature integration theory, the paper builds a model that combines weak fusion and strong fusion in the formation of perception information integration generated by silhouette elements that affect the perception of female suit in sensory evaluation. According to the addition and multiplication model in information integration, the paper also established an integration mathematical model for perception information in sensory evaluation of garment silhouette.

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Objective: To investigate the reversing effects of Wenxia Changfu Formula (WCF) on cisplatin (DDP) resistance of A549/cisplatin human lung adenocarcinoma cells in vitro.

Methods: A549 cells and A549/DDP cells were cultured by RPMI-1640 medium with 10% FBS. The inhibition of proliferation was detected by MTT assay. Cells were divided into three groups: control group (blank serum), DDP group (blank serum with 10 μg/ml DDP), and DDP with WCF group (10 μg/ml DDP with WCF drug-containing serum). The intracellular concentration of platinum, and the apoptosis rate increased more significantly in the DDP cells was 5.5. The intracellular platinum concentration, Topo-II expression, and the apoptosis rate of A549/DDP were observed by flow cytometry. The expression of membrane transporters P-glycoprotein (P-gp), Lung resistance protein (LRP), and Multidrug resistance-associated protein (MRP) as well as Topoisomerase-II (Topo-II), and Glutathione S transferase-π (GST-π) were assessed by immunofluorescence assay.

Results: The reversal multiple of WCF-containing serum on A549/DDP cells was 5.5. The intracellular platinum concentration, Topo-II expression, and the apoptosis rate increased more significantly in the DDP with WCF group than that of the DDP group (p < 0.05). The expression of P-gp, MRP, LRP, and GST-π decreased significantly (p < 0.05).

Conclusion: WCF-containing serum can significantly reverse the cisplatin resistance of A549/DDP cells and the mechanism lies in two aspects: it affects DDP transportation and metabolism in drug-resistant cells in addition to exerting a direct impact on cisplatin targets.

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Methods: A space-divided safe control strategy is presented in this paper, mixed three control methods during three procedures. Based on the attitude and position for both the puncture robot and the patient under the optical localization system, the operation space can be divided into three parts. In posture preparation space, impedance control method is used to make the robot easily controlled by the medical staff before the operation. In the straight line penetration space, the force control mode make the robot move only along a setting straight line, except drawing back when the force limit is reached. In the puncture sampling space, the robot should remain completely motionless until the sampling is accomplished.

Results: To verify the effectiveness of the proposed control strategy, 10 experiments were carried out. For each experiment, in the first space, the medical staff can all drag the robot end to the desired starting point. When different force disturbances from 5 N to 50 N were imposed on the robot, in the second space the robot can all draw back to the puncturing starting point, and in the third space the robot can remain completely motionless. All these tests verified the safety of the control strategy, and the whole system can fully meet the surgical needs.

Conclusions: Facing the safety of the puncturing robot, a space-divided safe control strategy is proposed, with three control methods in different working space. Experiments demonstrated the effectiveness of the strategy. It provides a good prospect of robot puncturing surgery.

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HHEME16-NE11752

EXPLORATION ON MERIDIAN TROPISM OF REHMMANIA GLUTINOSA BASED ON DISTRIBUTION ANALYSIS OF CATALPOL IN RAT TISSUES

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Objectives: Meridian tropism (MT) theory, a key principle of traditional Chinese medicine (TCM) theories, plays an essential role in instructing clinical pharmacy. To clarify MT theory clearly will certainly further promote the reasonable and effective application of TCM. This study aimed to observe the scientific essence on MT of dried root of Rehmannia glutinosa (RG), for the first time.

Methods: 80% ethanol extract of RG (RGEE) was administered orally to rats at the dose of 10 g/kg once a day for seven continuous days. At 15, 30, 60, 90, 120, 180 min after the last administration, biological samples including heart, liver, kidney, spleen, lung, intestine, brain, etc. were quickly collected from rats. HPLC assay was used to determine the concentration of catalpol in above biological samples, and software DAS 3.0 was used for analyses of pharmacokinetic parameters.

Results: After administration of RGEE to 60 to 90 min., catalpol in distribution of various tissues got to the highest, with concentrations of catalpol in liver, kidney, heart, spleen, lung, small intestine and brain for 5.53, 3.38, 2.63, 2.08, 0.84, 1.54, 1.81 µg/g, respectively. pharmacokinetic parameters were as followed by AUC0-∞ (µg/L/min) 779.33, 333.04, 298.84, 280.90, 86.99, 182.00, 247.15, t1/2 (min) 258.02, 43.12, 238.09, 133.95, 66.05, 93.76, 247.15, and CLz/F (L/min/kg) 130.82, 923.19, 436.52, 624.17, 3049.78, 1252.71, 472.69 in liver, kidney, heart, spleen, lung, small intestine and brain tissues.

Conclusion: These findings suggest that catalpol is one of the main material bases in MT of RG. RG mainly enters heart, liver, and kidney, and spleen, lung and small intestine, which is basically consistent with the traditional understanding. Besides, it is also suggested that spleen, lungs or (and) small intestine should be added to MT of RG into ‘Chinese Pharmacopoeia’.

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HHEME16-NE11756

BIOLOGICAL EVALUATION STUDIES OF ACETYL-COA CARBOXYLASE INHIBITOR IN HIGH FAT DIET INDUCED OBESE MICE

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Objectives: Acetyl-CoA carboxylase (ACC) is a key enzyme that related the regulation of fatty acid metabolism. We have previously reported a piperidinylpiperidines (compound 1) as ACC inhibitor, which were initiated by the known ACC inhibitor CP-640186. Now, we evaluated the long-term effect of compound 1 on metabolic parameters.

Methods: Seventy-two male C57BL/6 mice were randomized into two groups: control diet and high diet. The high diet group were then randomized into high diet control group (M) and treatment group, which were administered daily (po) for 28 days with vehicle or compound 1, respectively. The body-weight and glucose were measure weekly. The serum were taken to measure triglycerides, total cholesterol and free fatty acids, the ACC levels were analyzed by Western blot. The liver and adipose tissues were stained with hematoxylin and eosin.

Result: After the administration of high diet for 16 weeks, the body weight and blood glucose level were increased obviously of the high
died group. The adipose cells were bigger and fat caviation were observed in the liver sections. After the treatment with compound 1, the body-weight and blood glucose levels recovered in different degrees. The level of triglycerides and total cholesterol of the treatment group reduced inordinately while the level of free fatty acids increased relative to M group. The levels of phosphorylate-ACC were observed distinct were in different groups.

Conclusion: The long-term in vivo study results showed a significant reduction in p-ACC levels and a decrease in body-weight and glucose gain of treatment group in-compare with M group, which verified that compound 1 would be a potential drug-lead candidate for the treatment of metabolic disease.

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HHME16-NE11764
IS IT POSSIBLE TO CONSTRUCT A MEDICAL MODEL THAT ADVOCATE TO PREVENT DENGUE EPIDEMIC FOR PENGHU’S COMMUNITIES?
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Background: How is the medical concept in the era of action, filling an advantage of strategy, cultural intelligence model has indispensable research subjects, to understand the process of promotion and introduction that elevate cultural intelligence and their strategic administration as rational behavior to prevent dengue epidemic.

Methods: In view of this, this research plans to rely mainly on medical concept, set up and medical quality regard medical administration as cultural intelligence system of the direction, propose a set of scientific assessment tools (Structural equation model) to prevent dengue epidemic for cultural travel.

Results: This research also uses the SEM statistical method to conduct testing for the model itself, to construct a model for the communities to elevate willingness to accept cultural intelligence. According to the fact that the relationships between aspects are all positive numbers, the elevation of willingness to accept cultural intelligence can be deemed rational behavior to prevent dengue epidemic.

Conclusion: Thus, this research seeks to use those in the communities that elevate cultural intelligence and their strategic administration as research subjects, to understand the process of promotion and introduction of willingness to accept, to create a reference for Penghu’s communities used in elevating cultural intelligence for dengue epidemic.

Acknowledgements: Penghu Communities Reconstruction Plan III (Penghu, Taiwan) & Ministry of Science and Technology Plan: 105-2420-H-346-001*** (Taiwan, China).

HHME16-NE11797
DISSECTING THE EFFICACY OF HYPERBARIC OXYGEN ON SPORTS-INDUCED FATIGUE IN RATS
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Objectives: The aim of the present study was to investigate the effect of hyperbaric oxygen (HBO) group. We used automated hematology analyzer to test the blood physiological and biochemical indexes, and used real-time quantitative PCR technology (RT-PCR) to detect the gene expression of Nrf2, SOD and HO-1 genes in muscle tissue of experimental rats.

Results: It indicated that compared with SIF group, the white cell count, mean corpuscular volume, mean corpuscular hemoglobin content and SOD content of HBO group showed an increasing trend, while red blood cell count, hemoglobin and platelet count had a downward trend. And it showed that compared with SIF group, the expression of Nrf2 gene was declining in HBO group, and there were no significant differences in SOD gene expression between SIF and HBO group, and compared with SIF group, the expression of HO-1 gene was increasing significantly in HBO group (p < 0.05).

Conclusions: It suggested that HBO could help to relieve fatigue and protect blood cells from the damage of SIF, and during HBO therapy on SIF, the expression of Nrf2 gene would have an up-regulation effect on the expression of SOD and HO-1 gene, which would help to clear oxygen free radicals and other harmful substances in body and relieve fatigue so as to achieve the purpose of therapy on SIF.

HHME16-F311158
SPATIAL VARIABILITY OF SOIL ORGANIC CARBON IN XIAERXILI OF CHINA
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Objectives: Xiaerxili of China consists of the mountain forest, desert and the oasis area. The mountain forest is located in Xiaerxili nature reserve, which is less artificial interference. In order to grasp the Spatial Variability of soil organic carbon, 54 soil profile are selected, tested and analysed.

Methods: Sampling depth of 1 meter, using experiment by the potassium dichromate method, the statistical analysis, semi variance function fitting analysis and the Kriging interpolation analysis.

Results: Statistical analysis results show that the variation coefficient of organic carbon content in the range of 0.26–3.41. The desert area belongs to strong variability, mountain forest area and oasis area belongs to moderate variability; The results through semi variance function fitting model show that: the optimal fitting model of soil organic carbon for Xiaerxili was the Gauss model, nugget and sill ratio values were less than 25% in different soil layer (0–10 cm), indicating a strong space since the correlation; Kriging interpolation results showed that the mountain forest desert, the oasis area, in term of spatial distribution in different layers. Soil organic carbon showed a decrease with increasing depth on the vertical section, the trend in content of organic carbon in surface was significantly higher than that of the lower.

Conclusions: The results of the study enrich the research of soil organic carbon in arid area, and it has a good practical significance for regional ecological protection.

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HHME16-801
STUDY ON SPATIAL LOCALIZATION DIAGNOSIS TECHNOLOGY OF BONE HYPERPLASIA BASED ON PACS SYSTEM
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Objective: To study the application of Picture Archiving and Communication Systems (PACS) on Spatial localization diagnosis of bone hyperplasia.

Methods: 152 cases of bone hyperplasia patients were chosen as the sample. Preoperative protrusion space localization were conducted using
PACS system. The diagnosis value of PACS system assisted spatial localization were evaluated, combining with exploration during operation.

**Results:** The results of exploration during operation were consistent with preoperative protrusion space localization in all the 152 cases.

**Conclusion:** PACS system can be used in spatial location of the protrusion by establishing CT sagittal, coronal, and horizontal images, so that helps in diagnosis and treatment precisely.

Acknowledgement: This work was supported by the project of the special fund on the Science and Technology Innovation People of Harbin (2009RFQXS227).

**HHME16-S02**

META ANALYSIS BASED ON THE NCPAP METHOD IN THE TREATMENT OF PRIMARY AND RECURRENT APNEA SYNDROME OF NEWBORNs

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**Objective:** To analyze the treatment effectiveness of nasal continuous positive airway pressure (NCPAP) on the primary and recurrent apnea syndrome of newborns with Meta analysis methods.

**Methods:** The characteristics and the course of primary and recurrent apnea syndrome in newborns were established based on the cases data from Jiujiang maternal and child health care hospital; Jiujiang First People’s Hospital and Jiujiang University Affiliated Hospital newborns during July, 2013 to Dec., 2015. The data were conducted Meta analysis using Rev-Man software.

**Results:** All studies have shown a clear baseline equilibrium, and have comparability. After 1 h treatments, the patients’ arterial blood pH, arterial oxygen pressure (PaO\(_2\)), arterial partial pressure of carbon dioxide (PaCO\(_2\)) were all significantly improved compared with the data before treatment, the differences were statistically significant (\(p < 0.05\)). In the treatment group, the duration of apnea, oxygen therapy time and hospitalization time were significantly shorter than that of the control group, and the differences were statistically significant (\(p < 0.05\)).

**Conclusion:** NCPAP is a safe, relatively simple and non-invasive technique, which has a significant effect on the treatment of primary and recurrent apnea in preterm infants.

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**HHME16-S03**

CURATIVE EFFECT ANALYSIS OF THE OF COMPUTER NAVIGATION ASSISTED MINIMALLY INVASIVE TOTAL KNEE ARTHROPLASTY

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**Objective:** To compare the difference of the curative effect between computer navigation assisted total knee replacement and traditional operation, and to explore the curative effect and characteristics of computer navigation assisted operation.

**Methods:** 10 knees of 10 male and 11 knees of 10 female, totally 20 patients between 60 to 75 years old were selected as the study group. All the study group patients accepted Computer navigation assisted total knee arthroplasty (TKA) in Changhai Hospital of Second Military Medical University during Dec, 2014 to March, 2016. And 10 knees of 10 male and 10 knees of 10 female, totally 20 patients between 60 to 78 years old were selected as the control group. And all the patients in control group accepted traditional TKA. The operation time, intraoperative bleeding, postoperative drainage volume and the HSS scores 3 months after operations were compared between the two groups.

**Conclusions:** The operation time, intraoperative bleeding, postoperative drainage volume and the HSS scores were significantly shorter in control group than in study group. The differences were statistically significant (\(p < 0.05\)).

**Acknowledgement:** This work was supported by the project of the special fund on the Science and Technology Innovation People of Harbin (2009RFQXS227).
Objective: Developing orthopedic 3D image computer aided diagnosis system can provide the help for the diagnosis of the patients. 

Methods: According to CT scan and X-ray image data, it can have 3D reconstruction to the injured parts for the patients with fractures, it can have 3D reconstruction and evaluation according to the clinical data, namely 150 cases of patients from January 2014 to January 2016.

Results: Comparing the examination result of the patients with fractures with the computer three-dimensional reconstruction, \( p > 0.05 \), the difference is not of statistical significance.

Conclusion: According to CT scan and X-ray image data, it can have 3D reconstruction to the injured parts for the patients with fractures, it can have 3D reconstruction and evaluation according to the clinical data, namely 150 cases of patients from January 2014 to January 2016. The difference is not of statistical significance. This study combined radio frequency identification (RFID) technology with wireless sensor network technology (WSN) to set up a cold chain logistics tracking system and tracing system. This system can use RFID technology to realize the traceability of food; moreover, it can use WSN technology to achieve real-time monitoring over the environmental information of medical supplies so as to have timely report. Meanwhile, it can position the transport vehicles combined with the global positioning system (GPS), it also can have real-time monitor on the transport vehicles by using geographic information system (GIS).

Result: The result of experiment showed us that after integrating WSN, GPS and GIS systems, it can have real-time monitoring and management over cold chain logistics of medical supplies during transportation.

Conclusion: Through IOT technology, it can improve the safety of cold chain logistics of medical supplies.

Objective: To observe the effect of chronic periodontitis after endodontic treatment.

Methods: Having three-year observation continuously on 50 patients with 96 diseased teeth, so as to evaluate therapeutic effect.

Result: To have continuous observation on dental changes of teeth, which had endodontic treatment within three years, after endodontic treatment the change of periodontal is relatively stable, the preservation time is prolonged in cavity, and the preservation rate can reach to 84.4%, its function is significantly improved.

Conclusion: Through comparison with non endodontic treatment group, it has significant meaning which indicates timely endodontic treatment has positive effect on prognosis of patients with chronic periodontitis.
AREAS MEASURES OF ANTHROPOZOONOSIS IN EARTHQUAKE

Acknowledgements: Scientific research projects of the Inner Mongolian higher educational system NIZY171; Science research project of Inner Mongolia University for the Nationalities: NMDGP1418.

Conclusion: TC regimen in treating advanced ovarian cancer can achieve better clinical efficacy, with less adverse reactions and high degree of tolerance, which can play important role in prolonging the survival time and improving the life quality of patients.

Objective: After earthquake occurring in pastoral areas, due to the reasons such as many animals are dead, drinking water is polluted, the condition of food hygiene is poor, the weather is hot and the other factors, it is extremely easy to occur anthrozoosnosis, the purpose of this study is to prevent the occurrence of anthrozoosnosis in earthquake area.

Method: To have epidemiological investigation and monitoring on anthrozoosnosis including brucellosis, tuberculosis, rabies, schistosomiasis, so as to analyze the result and preventing method in a certain earthquake area.

Result: The average positive rate of brucellosis, tuberculosis, rabies, schistosomiasis is 0.96%, 1.32%, 0.63% and 1.65% respectively. The result shows tuberculosis and schistosomiasis are the main reasons to cause anthrozoosnosis in earthquake area, due to disaster area is an intensive farming area for pigs, cattle, sheep, especially pastoral area has higher infection rate, where exists a large hidden epidemic.

Conclusion: As for prevention of anthrozoosnosis in pastoral areas after earthquake, it should be mainly based on the prevention of tuberculosis and schistosomiasis, in this paper, it puts forward suggestion on the prevention measures of anthrozoosnosis.
Objective: To explore the effects of Na+/H+ exchanger regulator factor 1 (NHERF1) on the phosphorylation levels of Akt1, activity of gelatinase secreted by HUVECs, and expression and distribution of cytoskeleton inside Human Umbilical Vein Endothelial Cells (HUVECs), and to expound the molecular mechanism of NHERF1 to influence the proliferation, migration and angiogenesis of vascular endothelial cells.

Methods: To construct the recombinant eukaryotic expression plasmid of NHERF1 and stably transfect HUVEC line with recombinant plasmid respectively; to use the 3-4,5-Dimethyl-2-thiazolyl-2,5-diphenyl-2H-tetrazolium bromide (MTT) assay and gelatin zymography to detect the proliferation activity of HUVECs after verification with the Western blotting method; to use the Matrigel method to detect the angiogenesis ability of HUVECs after verification with the Western blotting method; to use the 3-4,5-Dimethyl-2-thiazolyl-2,5-diphenyl-2H-tetrazolium bromide (MTT) assay and gelatin zymography to detect the migration activity of HUVECs; to apply the Matrigel method to detect the angiogenesis ability of NHERF1 in cells; to detect the effect of NHERF1 on the phosphorylation levels of Akt1 by Western blotting; to use the gelatin zymography analysis to test the activity of gelatinase secreted by HUVECs; to observe the distribution of cytoskeleton with the immunofluorescence.

Results: The cDNA fragments of the exogenous NHERF-1 transfected have been integrated into the genome; NHERF-1 can significantly inhibit the proliferation, migration and angiogenesis of HUVECs, obviously down-regulate the phosphorylation levels of Akt11, make HUVECs decrease the secretion of reduction proenzyme and active enzyme, and also influence the distribution of cytoskeleton in vascular endothelial cells, compared to the cells in the control group.

Conclusion: NHERF1 can inhibit proliferation, migration and angiogenesis of HUVECs, and the inhibiting mechanism might relate to adjustment of the phosphorylation levels of Akt11, regulation of the activity of gelatinase secreted by HUVECs, and influence on the distribution of microfilament cytoskeleton.

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Aims: Investigating the different effects of different concentrations of uric acid on the osteogenic differentiation of human bone mesenchymal stem cells (hBMSCs) and exploring its mechanism.

Methods: Culture in vitro of healthy adult hBMSCs with the method of whole bone marrow adherent. After culturing the third generation, respectively culture hBMSCs in three kinds of medium. MTT colormetry was used to detect the Proliferation ability of hBMSCs. Observed the three groups of hBMSCs morphology with inverted microscope. Compared the control group and the experimental group 1 by RT-PCR, alkaline phosphatase staining (ALP) and alizarin red staining. Immunocytochemistry staining and RT-PCR was used to detect the expression of 11β-HSD1 mRNA, Cbfa1/Runx2 mRNA and Wnt signaling pathway related genes expression.

Results: MTT value was significantly higher in the experimental group 1 than in the control group, and related to time and concentration; immunocytochemical staining technique showed that in both three groups the cytoplasm cells have brown positive staining granules, detection of 11β-HSD1 mRNA shows that with the concentration of uric acid increased and osteogenic ability increased, optical density decreased gradually, RT-PCR technology showed that both three groups expressed the 11β-HSD1 mRNA, with the concentration of uric acid increased and osteogenic capacity increased, the expression of 11β-HSD1 mRNA gradually decreased; the control group had no Cbfa1/Runx2 mRNA expression in every time point, with the increase of the concentration of uric acid and time prolonged, Cbfa1/Runx2 mRNA expression gradually increased in the experimental group 1; ALP and alizarin red staining showed with the concentration of uric acid increased, the amount of calcium nodules increased; The expression of Wnt signaling pathway related protein Wnt-3a mRNA and β-catenin mRNA was upregulated (p < 0.05).

Conclusion: Uric acid can promote the differentiation of hBMSCs into osteoblasts, which may be accomplished by promoting the expression of 11β-HSD1, Cbfa1/Runx2 and Wnt signaling pathways.
HHME16-S18
APPLICATION OF REMOTE MEDICAL SYSTEM IN THE SEVERE TRAUMA PRE-HOSPITAL FIRST AID
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Objective: Study the effects of the application of remote medical system in the severe trauma pre-hospital first aid.

Methods: Select Inner Mongolia national university affiliated hospital using remote medical system to rescue 43 emergency patients with severe trauma in June 2014–September 2015. And 42 emergency patients with severe trauma who are prior to use remote medical system in October 2013–June 2014 were compared.

Results: They arrived at the emergency department time of two groups patients has no statistical significance (p > 0.05). Remote group has shortened the treatment time than traditional significantly (p < 0.05), and mortality remote also been decreased significantly (p < 0.05).

Conclusions: The application of remote medical system for patients with severe trauma emergency in pre-hospital first aid could make the hospital treatment in advance, shorten the treatment time, combine the hospital andprehospital first aid, and reduce the mortality of severe brain injury.

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HHME16-S19
APPLICATION STUDY ON MRI AND CT COMBINED DIAGNOSIS TECHNOLOGY IN BRAIN GLIOMA DIAGNOSIS
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Objective: To study the application of CT and MRI fusion technique in the diagnosis of brain glioma.

Methods: Six cases of brain glioma patients in the Affiliated Hospital of Inner Mongolia University for the Nationalities during January 2014 to December 2014 were selected as the study group. The study group patients accepted CT and MRI scan, and then through the fusion technology the MRI images were mapped to CT images. The rolling shutter technology was used in the CT images to determine the human body contour and other hard tissue such as bones, and MRI images were used to determine the target area boundary and other soft tissue. While another 6 cases of brain glioma patients who only accepted CT scan were selected as control group.

Results: The study showed that CT and MRI fusion technology has greatly improved the outline of the target area, the normal organization, the reliability of the outline of the dangerous organs in study group. The reliability and accuracy of the clinical diagnosis of the study group were significantly higher than that of the control group (p < 0.05).

Conclusion: The MRI and CT combined diagnosis technology can improve the clinical diagnosis of cerebral gliomas greatly.

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HHME16-Z01
RESEARCH ON OCCUPATIONAL HEALTH PROTECTION OF COAL MINE BASED ON THE COMPREHENSIVE CONTROL OF POWER QUALITY
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Objectives: Power quality of a coal mine could produce high frequency electromagnetic waves, causing dysfunction of the central nervous system and autonomic nervous system for workers. Simultaneously, it makes electrical equipments to produce mechanical and electromagnetic noise, affect workers’ work, study and rest. And strong noise could cause hearing loss and neurasthenia syndrome and other diseases. So, it is necessary to control the power quality, and ensure the health of the employees.

Methods: Aim at the harmonic, reactive power and negative sequence of coal mine power supply system, a comprehensive compensation scheme of injection hybrid active power filter (HAPF) and magnetic control reactor (MCR) was put forward. According to the size of the loads, the reactive power was compensated by the magnetic control static var compensator (MSCV), which is composed of the MCR and the fixed capacitor group. The negative sequence current of the system was balanced through three single-phase MSVC. The harmonic distortion rate of the coal mine power grid would be improved using injection HAPF.

Results: The proposed scheme not only could effectively filter the harmonic generated by the nonlinear loads, but also dynamically compensate the reactive power of the coal mine loads. The power quality of the coal mine power supply system has been improved greatly.

Conclusions: The comprehensive scheme of injection type HAPF and MCR has could ameliorate the power quality, greatly improving the electromagnetic environment of a coal mine, cutting down the noise of electrical equipment, and it reduces health damage of employees.

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HHME16-Z02
PREDICTING HUMAN GENE WITH GENOMIC SIGNAL PROCESSING AND COMPRESSED SENSING
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Objectives: Genomic Signal Processing (GSP) has been defined as the analysis and processing of genomic signals for obtaining biological knowledge. A key goal is to discover clustering of genes or gene products that can be used to classify disease, further leading to a functional understanding of disease and the development of systems-based medical solutions by characterizing genomic and proteomic regulation.

Methods: We proposed a novel adaptive filter to predict protein coding regions based on compressed sensing. We first studied most of existing DNA representations and defined a novel DNA representation with the theoretical framework of compressed sensing, then applied period 3 behavior of DNA sequence to design the adaptive filter for identifying coding regions from non-coding regions. Finally the real human DNA datasets were used to verify the proposed algorithm.

Results: Sensitivity, specificity and accuracy were used to evaluate the prediction performance. Computational results show the presented approach can predict the true genes in a long DNA sequence with about 80% accuracy.

Conclusions: The proposed adaptive filter based on compressed sensing can properly identify the protein coding regions in a DNA sequence, and is hopefully used to predict the other biological functional units in genomic and proteomic sequences in future by integrating other period features.

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HHME16-Z03
THE IMPACTS OF TELECOMMUNICATIONS ON PUBLIC HEALTH: CROSS-COUNTRY EVIDENCE
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Objectives: Today a consensus is emerging on the fact that information and communication technology plays a significant role in improving public health and the quality of life, however, the studies on the relationship between telecommunications and public health are rare. This paper aims to empirically examine how telecommunications affect health outcomes.

Methods: Drawn from the World Bank database, data for 61 different countries is used to construct a panel dataset of health and telecommunications variables for the period 2000 to 2014. A dynamic panel regression model with generalized method of moments (GMM) and a fixed effect (FE) model are employed in this study. The development of telecommunications is represented by the number of fixed telephone subscriptions per 100 people, the number of internet users per 100 people and the number of mobile cellular subscriptions per 100 people.

Results: The results of the cross-country analysis indicate that an increase in the stock of telecommunications infrastructure is positively correlated with life expectancy. The diffusion of mobile and fixed telephones is negatively associated with infant and under-five children mortality rates. The diffusion of the Internet is associated with an increase in prevalence of HIV.

Conclusions: Overall, our findings suggest that telecommunications have significant effects on health outcomes, telecommunications investment seems to be an alternative policy to improve public health.

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HHME16-Z04
A STUDY ON HIGHWAY SLOPE BIOLOGICAL PROTECTION TECHNOLOGY
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High slope of highway is characteristic of geotechnical complexity, huge quantity and rapid construction speed, etc., which leads to accidents of distortion damage during construction. Given this condition, an optimized, practical design research method have been proposed based on a case study of high slope of highway construction. An optimized design research result could be developed through a sequence of conduct a survey of high slope conditions, propose suggestions as to division of optimized design, select key slope and research on optimizing key slope’ before research results could be soon applied in construction of high slope by units of owner, designing, construction, etc. By combing deformation theory and strength theory, key appraisal method and damage control method for high slope have been developed on the basis of geotechnical process theory. After an analysis of stability for high slope distortion, damage modes of high slope could be determined as well as its process of development. Analysis could be made as to current stage and position of potential slip plan by combing feedback information from construction and inspection. Afterwards, an optimizing design could be made after required data are obtained by strength stability method. A further optimize could be achieved by adopting distortion theory combined with construction and feedback information from inspection to test effects of supporting, before a final plan could be determined. Results of practical case indicate that this method could guarantee rapid construction speed and normal operation of highway high slope.

HHME16-Z05
INTERNET PLUS HEALTHCARE MODE IN CHINA: FUTURE DIRECTIONS AND CHALLENGES
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Objectives: As the integration of Internet and traditional healthcare services, Internet Plus healthcare is expected to restructure the current healthcare ecosystem fundamentally and ease the medical current problem of the general public in China. The objective of this study is to construct an Internet Plus healthcare mode which is suitable for China’s national condition and perform an extensive analysis on it.

Methods: Based on the connotations and contents of Internet Plus healthcare, we utilize layering method to construct the system architecture of Internet Plus healthcare mode, then make a detailed analysis of the contents for each layer and meanwhile discuss the challenges the system may face.

Results: The system architecture of Internet Plus healthcare mode is divided into three levels: the off-line subjects, the online diagnosis system and the cloud database. Among them, the off-line subjects include medical institutions, patients and network pharmacies; the online diagnosis system includes registration subsystem, electronic medical record subsystem, billing subsystem and evaluation subsystem; and the cloud database includes the historical medical records database of individual patient and the anonymous public medical record database.

Conclusions: The Internet Plus healthcare mode proposed above has both benefits and limitations, but overall, with the wide availability of the internet and information technology, the system could improve medical efficiency and raise health awareness among the wider public.

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HHME16-Z06
INDUSTRIAL REVOLUTION IN COMMUNICATION 4.0 AGE: TAKING CHINA’S MEDICAL INDUSTRY AS EXAMPLE
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Objectives: Currently, communication network is transforming itself rapidly to Communication 4.0 age based on general information technology, which will definitely bring about profound industrial revolutions to other industries. Medical industry directly affects people’s life safety and health, the aim of this paper is to introduce the new concept of ‘Communication 4.0’, review current state of healthcare industry in China and perform an extensive analysis of the medical industrial revolution in Communication 4.0 age in the near future.

Methods: The core of Communication 4.0 is to construct a communication architecture which supports functions virtualization, resource sharing and network programmable based on network functions virtualization (NFV) and software defined network (SDN). We perform comparative analysis of the industrial structure between healthcare industry in Communication 4.0 age and traditional health industry present in China, and discuss important issues probably being experienced in employing such systems in clinical settings.

Results: In the network architecture of Communication 4.0, healthcare industry discards the traditional boundary, all elements (including clinical information, health management and medical platform construction
etc.) are networked, thus the overall efficiency of medical services improves greatly.

**Conclusions:** By coining the new concept of ‘Communication 4.0’ and analyzing the medical industrial revolution in this new era, we are paving the way for future research to have a clearer understanding of the architecture for future communication systems and the corresponding industrial revolution, especially for medical industry.

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HHME16-Z07

**P-TERT-BUTYLPHENOL MOLEULARLY IMPRINTED STIR BAR SORPTIVE EXTRACTION COUPLED WITH HPLC FOR BISPHENOL A ANALYSIS**

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**Objectives:** P-tert-butylphenol was selected as dummy template to prepare molecularly imprinted stir bar coatings. And the dummy template molecularly imprinted stir bar was used for the selective extraction of bisphenol A in water samples.

**Methods:** Glass capillary was used as substrate and a magnetic core was sealed in it. The coating thickness was 0.2 mm. The sample volume was 30 mL. The optimal extraction time was 90 min. The best desorption solution was methanol. And the desorption time was 10 min.

**Results:** The p-tert-butylphenol molecularly imprinted stir bar showed good selectivity to BPA. The imprinting factor was 3.2. It was successfully used for BPA extraction coupled with HPLC analysis in reservoir water samples. The recoveries were between 84.8% and 127.5%. The RSDs were between 0.77% and 6.70%.

**Conclusions:** The proposed p-tert-butylphenol dummy template molecularly imprinted stir bar coatings showed good selectivity to target analysis of BPA. The dummy template molecularly imprinted coatings could avoid template leakage during analysis.

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HHME16-Z08

**ULTRASONIC EXTRACTION COUPLED WITH HIGH PERFORMANCE LIQUID CHROMATOGRAPHY FOR PARABENS ANALYSIS IN COSMETICS**

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**Objectives:** A fast and effective method for the analysis of parabens in cosmetics was established. And it was used for parabens detection in five kinds of real samples.

**Methods:** Five cosmetic samples of nourishing & hydrating toner, beauty & softening emulsion, men’s facial cleanser, nourish hand cream and spearmint toothpaste, were extracted by ultrasonic extraction method. The optimal extraction solvent was dichloromethane and the extraction time was 15 min. The liquid extract was evaporated and redissolved in methanol. Then it was analyzed by high performance liquid chromatography.

**Results:** Methyl paraben and propyl paraben could be detected in the first three samples. The contents were between 6.82 mg/L and 17.84 mg/L. The RSDs were between 1.5% and 5.8%. The recoveries of five samples were 91.43%–113.46% with the RSDs of 0.3%–6.6%.

**Conclusions:** The method of ultrasonic extraction coupled with high performance liquid chromatography detection of parabens in cosmetics was established. It was fast and effective, and it could be used for real sample analysis.

**Acknowledgements:** Supported by the National Natural Science Foundation of China (Grant No. 21565018).

HHME16-Z09

**SOXHLET EXTRACTION COMBINED WITH MOLEULARLY IMPRINTED POLYMERS MICROEXTRACTION FOR QUERCETIN SEPARATION FROM HAWTHORN SAMPLES**

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**Objectives:** Quercetin molecularly imprinted monolithic bar was prepared. Quercetin in the Hawthorn samples was separated by Soxhlet extraction combined with molecularly imprinted polymers microextraction, and analyzed by HPLC.

**Methods:** The extraction solvent was 40% methanol solution. The extraction temperature was 90°C. The extraction solvent was refluxed twice. The desorption time was 25 min. The desorption solution was analysed by HPLC with a DAD detector.

**Results:** The solid-liquid partition coefficient of quercetin (K) was 34.2. The quercetin content in Hawthorn was 0.032 mg/g. The extraction efficiency by Soxhlet extraction combined with molecularly imprinted polymers microextraction method was better than the extraction efficiency by ultrasonic extraction method and vacuum ultrasonic extraction method.

**Conclusions:** The proposed Soxhlet extraction combined with molecularly imprinted polymers microextraction for quercetin was high efficient. The isolation and purification of quercetin could be achieved rapidly and simultaneously.

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HHME16-Z10

**EFFECT OF GROSS POLYSACCHARIDE OF RADIX REHMANNIAE PREPARATA ON BOTH QI AND BLOOD DEFICIENCY MODEL OF RAT THYMUS AND SPLEEN TISSUE MORPHOLOGY**

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**Objectives:** To explore the effect of Rehmannia polysaccharide on both qi and blood deficiency model rats immune organ morphology.

**Methods:** Took 60 rats, male, weighting 170–180 g. Animals were divided into 6 groups, that’s blank group (B) and model group (M), large/medium and small doses of gross polysaccharide of Radix Rehmanniae Preparate (L-GPFRP/M-GPFRP/S-GPFRP), Danggui Buxue oral liquid (DBOL). Except B, the rest established the model of deficiency both qi and blood with blood loss (1 ml/180 g) and injection of cyclophosphamide (0.2 mg/10 g). The 5 modeling groups were given the corresponding medicine to fill the stomach, and B were injected with such as volume of physiological saline. Once a day, period of 14 days, to last for 2 h observed rats, tail took blood and test RBC, WBC, then rats were sacrificed, fetched thymus and spleen, fixed in 10% formalin solution, slice for inspection.

**Results:** Compared with B, the thickness of thymus cortex and spleen in M were significantly reduced, and the number of cortical cells was significantly decreased ($p < 0.01$), which showed that the model was successful. And compared to M, M-GPFRP/S-GPFRP could make the thickness of thymus cortex and spleen sections increased significantly, and the number of cortical cells was increased ($p < 0.01$), L-GPFRP on thymus cortex thickness with increasing trend; DBOL could make...
the thickness of thymic cortex and cortical cell number increased significantly (p < 0.05), the splenic nodules increased significantly (p < 0.01), tended to increase the number of cortical cells.

Conclusions: GPRRP has the effect of antagonistic model rats immune organ atrophy.

Acknowledgements: Supported by a project grant from Henan province university science and technology innovation team (Grant No. 2012IRTSTHN011).

HHME16-Z12
STUDY ON HYDROGEN PEROXIDE LOW TEMPERATURE STERILIZATION TO MEDICAL APPARATUS AND INSTRUMENTS BY COLD PLASMA

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Objectives: The objectives of this study was to improve the effectiveness of medical device sterilization of metal and nonmetal materials by means of modification of the structure and discharge electrode of low temperature sterilization device of hydrogen peroxide H2O2 plasma.

Methods: Hydrogen peroxide H2O2 gas ionization into plasma state in a vacuum state combined with radio frequency power supply and two technologies such as suspension electrodes and shielding electric field technology to produce vacuum ultraviolet, which have higher energy and faster movement diffusion. It can realize the low temperature, drying and sterilization treatment of medical equipment. Its safety, sterilization effect and biocompatibility are studied.

Results: Multilayer capacitor discharge electrode structure, space utilization rate is high, up to 90%, and argon and nitrogen plasmas are better than single oxygen. Sterilization temperature is low, only 35 degrees. The sterilization time compared with the conventional equipment is short, only 30–35 min. No hydrogen peroxide (H2O2) residue, which can be seen by the residual concentration of 8 hr (TWA) ≤1.5 mg/m³, Hydrogen peroxide will result in simple compounds H2O and O2. The semi periodic cycle was verified by using thermophilic Bacillus spores, and without the growth of bacteria, the effect of microbial sterilization is good. After low temperature sterilization of hydrogen peroxide H2O2 plasma, the cell toxicity test was carried out in 4 hr after the low temperature sterilization of the metal and nonmetal materials, which show negative with the human biological compatibility.

Conclusions: The new hydrogen peroxide plasma sterilization using multilayer RF capacitive discharge technology in the argon and nitrogen plasma atmosphere, can achieve high efficiency, low temperature, non-toxic and biological compatibility.

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HHME16-Z13
NAPROXEN DRUGS ANALYSIS BY REVERSE PHASE CHIRAL LIQUID CHROMATOGRAPHY

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Objectives: A fast and simple reverse phase chiral liquid chromatography method was established to separate and detect chiral naproxen enantiomers. Two naproxen drugs were analyzed by the proposed method.

Methods: The chromatographic column was YMC CHIRAL ART Cellulose-SB (5 μm, 250 × 4.6 mm). The mobile phase was methanol-0.1% formic acid solution. The flow rate was 0.6 mL/min. The column temperature was 20°C and the detection wavelength was 254 nm.

Results: The naproxen enantiomers were baseline separated. The resolution (R) was 2.0. Two chiral drugs of naproxen capsules and naproxen tablets were separated and analyzed by the proposed method. Only (S)-naproxen could be founded. The contents of (S)-naproxen in two drugs were 98.5 mg/g and 93.3 mg/g, respectively.

Conclusions: The proposed reverse phase chiral liquid chromatography method was fast and simple. The used mobile phase had better compatibility with sample solutions. It could be used for chiral naproxen enantiomers analysis in real samples.

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HHME16-Z14
SUBSURFACE DRIP FERTIGATION SCHEDULING OF MAIZE IN THE SEMI-ARID AREA OF NORTHEAST CHINA

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Objectives: In field maize application of subsurface drip irrigation, there is a theory of water and nitrogen efficiency needs to be improved. The purposes of the experiment were to establish scientific and reasonable subsurface drip fertigation scheduling in the semi-arid area of northeast China.

Methods: The experiment was conducted in the water cycle comprehensive experiment site in Fuxin, Liaoning province, during 2014.5–2015.10, which is located The drip tape was buried in the 20 cm depth. The water and nitrogen precise control experiment set two factors, including irrigation amount and nitrogen application. Irrigation amount set three levels, including 24 mm, 36 mm and 48 mm. Nitrogen application set 120 kg/hm², 180 kg/hm² and 240 kg/hm² three levels. The experiment was to study the influence of subsurface drip fertigation on yield, water consumption, water and nitrogen use efficiency on the subsurface drip irrigation.

Results: Nitrogen dissolved with water could enter into the root zone of soil. Subsurface drip fertigation promoted the absorption of water and nitrogen, thereby promoting the growth of plants. Meantime, it made net photosynthetic rate and transpiration rate maintained at a higher level, which was promoted the accumulation of dry matter and eventually lead to increase yield. The influence of water and nitrogen application had significant effects on maize yield. Appropriate nitrogen and irrigation was able to improve water and nitrogen use efficiency.

Conclusions: It is concluded that the irrigation amount of 36 mm, nitrogen application of 180 kg/hm², was for a better water-saving fertigation scheduling of subsurface drip irrigation in dry year.

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HHME16-Z15
REAL-TIME MONITORING METHOD OF HOSPITAL PARKING SPACES TARGETING NUMEROUS MOBILE APP USERS

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Aims: There are tons of hospitals across the country or even across the world. Difficulty in finding parking spaces in hospitals is a
common problem faced by all hospitals. While addressing this problem, this paper creates new service value.

**Methods:** Real-time query and reservation service of hospital parking spaces for countless mobile APP users are supported by arranging a detection system of Internet of Things free of charge for the hospitals and based on the large-scale real-time monitoring data of parking spaces in numerous hospitals.

**Results:** The proceeds derived from the real-time query and reservation service of hospital parking spaces for countless mobile APP users can be used to pay the costs of arranging a detection system of Internet of Things free of charge for the hospitals, and meanwhile such service will generate sustained profits.

**Conclusions:** This paper gathers large numbers of mobile APP users to create new value by taking the large-scale real-time monitoring data of parking spaces in numerous hospitals as the core competitiveness.

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**HHME16-Z16**

AN IMPROVED MEDICAL IMAGES SEGMENTATION APPROACH USING ACTIVE CONTOUR MODEL

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**Objectives:** To improve the over-segmentation in variational level set segmentation algorithm caused by LBF segmentation model, and to solve the problem of C-V model for medical images whose background gray and segment target are inhomogeneous.

**Methods:** An active contour model based on local and global information is proposed. It integrates the advantages of C-V model and LBF model. Three energy functional terms are determined for the actual demand, which are local energy functional, global energy functional and punishment energy functional. Since it introduces the energy punishment item of level set function, the algorithm can not only eliminate the high speed train is located at 93~98 dB (A), and its value increases linearly with the increase of the train speed. The difficulty of train noise reduction lies in the middle and low frequency bands, and the noise of the traction gear transmission becomes one of the main sources of noise inside the train. The precise modification of gear is a principal method for improving performance of transmission and reducing vibration and noise.

**Methods:** By means of the method of profile modification and axial modification, tip and root relief of the driving and driven gear were carried out, and a short modification way was utilized in the aspect of the modification length. Considering the contact phenomenon of the alternate increased stress of two gear tooth ends in running, and in order to avoid the ‘edge effect’, end relieves was adopted at the both ends of two gear.

**Results:** According to the modification parameters obtained by the study of modification scheme and optimization model, modification machining such as alignment, rough grinding and fine grinding was tested on the subject. Based on the gear transmission system test bench, the noise of driving device before and after modifying were tested and compared, the tests found that the sound level A of driving device noise could reduce 6~10 dB after modifying.

**Conclusions:** The reasonable modification design of locomotive traction gear can significantly reduce the vibration and noise and obtain a better modification effect.

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**HHME16-Z17**

GENE PREDICTION BASED ON MULTIPLE STATISTICAL FEATURES AND SVM

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**Objectives:** Genes play a vital role in a variety of life activities and efficient prediction algorithm is demanding for accurate identification of genes. Currently gene identification based on statistical features is satisfactory for the long gene sequences, but is without impressive success for the short gene sequences.

**Methods:** We proposed a novel method to predict genes using multiple features and support vector machine (SVM). We first calculated four statistical features including base composition, period-3 behavior, codon usage and base location relation using the training datasets, then applied SVM to build the model, more specifically, the four features are chosen as inputs and the binary attributions (coding and non-coding values) as outputs. Finally the testing datasets were used to verify the SVM model.

**Results:** Sensitivity, specificity and area under the receiver operation characteristic curve (AUC) were used to evaluate the prediction performance. Computational results show that each feature is effective for gene identification and SVM can improve prediction accuracy and AUC when compared to Fisher linear discriminant.

**Conclusions:** The proposed algorithm using four statistical features and SVM significantly enhance gene prediction accuracy, especially for the sequences whose lengths are less than 90 base pair.

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**HHME16-Z18**

RESEARCH ON THE TRACTION HELICAL GEAR NOISE REDUCTION AND MODIFICATION DESIGN METHOD OF HIGH-SPEED LOCOMOTIVE

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**Objectives:** Long term exposure to the noise above 80 dB (A), people’s hearing may be damaged. In our country, the tourist area noise in the high speed train is located at 93~98 dB (A), and its value increases linearly with the increase of the train speed. The difficulty of train noise reduction lies in the middle and low frequency bands, and the noise of the traction gear transmission becomes one of the main sources of noise inside the train. The precise modification of gear is a principal method for improving performance of transmission and reducing vibration and noise.
HHME16-Z19
DYNAMICS OF EPIDEMIC SPREADING IN MULTIPLEX NETWORKS
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Objectives: To explore the dynamics of epidemic spreading in human networks is of great importance. Multiplex networks, networks that have different types of edges but share a common set of nodes, could be used to describe the human networks.

Methods: The topology of multiplex networks is characterized by graphs and matrices. The models to describe the epidemic dynamics on multiplex networks are presented according to the topology characteristics.

Results: The formulas of infected density of SI model and epidemic threshold of SIS model in multiplex networks are presented. A strategy is proposed to restrain the epidemic spreading. The validity of the formulas and the strategy are verified by simulations on both computer generated networks and real world network.

Conclusions: Taking the multiplex topology into account is better in controlling the epidemic spreading. It sheds light on how to model the dynamics of epidemic spreading and how to control the epidemic spreading in humans.

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HHME16-Z21
THE RESEARCH OF MENTAL HEALTH MONITORING AND GUIDANCE SYSTEM
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Objectives: A psychological problem of college students has become an important issue in higher education. The current mental health education and more to discover – guide – education – traditional assessment is carried out. With the rapid development of social media, this education cannot effectively monitor the current college students' psychological changes. Against this background this paper presents a micro channel through social software and other groups as well as schools, parents, teachers, students, cadre's multi-linkage of students' psychological health monitoring and guidance system.

Methods: Analysis of Mental Health Education in the current issue on the basis of theoretical study and practice the way among the key elements identified with the elements of monitoring and guidance system of the right weight. The system focused on the use of modern social interaction tools. Monitoring systems clear the main responsibility and function of each element. Monitoring and prevention system in place to advance mental health education to post-education be as the main mode of the current.

Results: In this paper, theoretical discussion of the way the initial establishment of the students' psychological health monitoring and guidance system were done. The system integrates a wide range of effective resource schools, student organizations and teachers. Meanwhile, the current system focuses on the use of advanced social tools to achieve the full range of key student mental health monitoring. Instability of the system once the system will be able to play a role. Colleague system can promptly signal to educators concerned about the psychological problems of college students. Educators can able to deal with their problems and confusion. So it will be able to avoid some of the serious incidents on campus.

Conclusions: Study team conducted a test run of the system within a certain range, found students' psychological health monitoring and guidance system can solve the current psychological education of college students lag extensive problems. The system can function effectively in all aspects, in order to force a way to focus on college students' mental health monitoring and guidance. These proved that the system can effectively improve the ability of University students' psychological health education.

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HHME16-Z22
RESEARCH ON THE EMERGENCY RESOURCE OPTIMIZATION DISPATCH FOR THE PUBLIC EMERGENT EVENTS
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Objectives: Due to the social contradictions, natural disasters, economic security and other aspects of the reasons, Public Emergent Events happen from time to time. To optimize the dispatch of public emergency resource is an important way to limit casualties and reduce property losses.

Methods: This paper established a double objective model which is for the sake of minimizing the time of emergency resource dispatch and the number of emergency rescue base, and then used Voting Analytic Hierarchy Process (VAHP) of operations research to solve the model.

Results: The empirical analysis shows that the double subjective model can reduce the number of emergency rescue base and the cost of rescue. The developed platform makes the emergency decision fast and scientific.

Conclusions: The results provide reference for the scientific emergency rescue in public emergent events, the reduction of secondary disaster loss, and the reduction of accident rescue time and cost.

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HHME16-Z24
NETWORK CODING OPTIMIZATION SCHEME IN THE MEDICAL NETWORK
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Objectives: Network coding applied to the medical network can effectively improve the accuracy of the network, the smooth general characteristic, and security. The network coding optimization based on niche genetic algorithm can observably reduce the network overhead of encoding technology, however, security issues haven’t been considered in the coding operation. So it is necessary to process research on optimization of network coding based on improved niche genetic algorithm.

Methods: It is on the basis of multi-target niche genetic algorithm (NGA) to construct a fitness function which with k-secure network coding operation. So it is necessary to process research on optimization of network coding based on improved niche genetic algorithm.

Methods: This paper is established a double objective model which is for the sake of minimizing the time of emergency resource dispatch and the number of emergency rescue base, and then used Voting Analytic Hierarchy Process (VAHP) of operations research to solve the model.

Results: The empirical analysis shows that the double subjective model can reduce the number of emergency rescue base and the cost of rescue. The developed platform makes the emergency decision fast and scientific.

Conclusions: The results provide reference for the scientific emergency rescue in public emergent events, the reduction of secondary disaster loss, and the reduction of accident rescue time and cost.

Acknowledgements: Supported by a project grant from Soft Sciences Foundation Project of Jiangxi Province (20161BBA10012), and the Education Department of Jiangxi Province (GJJ150534).
Conclusions: This paper will jointly consider coding overhead and security, to reduce the medical network coding overhead while improving the security of network coding. And on the basis of NGA proposed INGA, the program built k-secure network coding fitness function. In addition, INGA program improved the efficiency of the evolution of the population, to ensure the diversity of the population. By comparing the simulation, it shows that the INGA scheme in getting the running time of the optimal solution and the convergence algebra are obviously less than that of the NGA scheme, and greatly improve the security, the overall performance of the algorithm is improved obviously.

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HHME16-Z25
REVERSE VEHICLE TRACKING METHOD IN HOSPITAL PARKING LOT BASED ON MOBILE APP
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Aims: Due to numerous vehicles in the hospital parking lot, it is extremely difficult for owners to find their car when returning to the parking lot. The problem of difficulty in reverse vehicle tracking in hospital parking lot is tackled through the methods stated in this paper.

Methods: The location of the owner’s car in the hospital parking lot in the background database is acquired via the mobile APP. Then the best route between the owner’s current location and the car’s location is calculated, and this location and this route are sent to the user through the mobile APP.

Results: The reverse vehicle tracking in hospital parking lot based on mobile APP can provide the car owners with the location of the car in hospital parking lot and the best route of finding the car.

Conclusions: The reverse vehicle tracking in hospital parking lot based on mobile APP can help the car owner to find their car as soon as possible.

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HHME16-Z26
CORN FLOUR BY GC-ECDB AND MS METHOD FOR DETERMINATION OF CYPERMETHRIN AND DELTAMETHRIN PESTICIDE RESIDUES AND CONFIRMATION OF ITS ISOMER
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Objectives: At cypermethrin and deltamethrin isomer standard not all cases, screen and locate all isomer in the complex matrix samples, and quantitative analysis by GC-ECDB and MS method.

Methods: Using qualitative analysis by MS combined to quantitative analysis by ECD for testing. Auxiliary experiments: Including sample high concentration of standard solution, respectively treated by alkali solution diluted concentration of standard solution, after adding standard sample solution, change the temperature of the injection port.

Results: The quantitative analysis for two kinds of chrysanthemum ester by GC-ECDB method provides excellent index methodology. The instrument precision of cypermethrin and deltamethrin was 0.60% (n = 6) and 1.64% (n = 6); The method detection limit was 2.15 ng/g (RSD = 2.3%) and 2.00 ng/g (RSD = 3.1%), the method quantitative limit was 10.85 ng/g (RSD = 3.3%) and 10.05 ng/g (RSD = 3.6%); Linear regression equation was \( Y = 1358.54 \times - 107.30, r = 0.9995 \) (n = 8) and \( Y = 1664.03 \times - 3129.94, 0.9997 \) (n = 8) and linear range are 1.081 to 720.67 ng/mL and 1.004 to 669.33 ng/mL. The recovery rate was 98.47% (RSD = 1.91%, n = 9) and 98.80% (RSD = 2.01%, n = 9).

Conclusions: The analysis method of system could be used to other chrysanthemum ester pesticides isomer of positioning and measurement for reference, especially in the chromatographic column polarity changes cause the isomer chromatographic behavior. In addition, the auxiliary experiment also accidentally reveals the higher temperature of injection port leads to conversion between isomers, which prompt the temperature setting of the injection port should keep a balance between isomer completely gasification and stability.

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HHME16-Z27
THE IMPACT OF NOTCH SIGNAL PATHWAY ON NEURONAL APOPTOSIS AFTER CEREBRAL ISCHEMIC PRECONDITIONING
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Objectives: To observe the effect of ischemic pretreatment on Notch1 protein expression in neurons and assess the influence imposed by ischemia reperfusion injury on neuron proliferation and apoptosis.

Methods 1: Neurons were divided into control group (cell group), hypoxia preconditioning group (group a), ischemia-reperfusion injury group (group b), hypoxia pre-conditioning + ischemia-reperfusion injury group (group a + b). The expression of Notch1 in each group was detected by Western blot.

Results 1: Notch1 protein expression of group a, b and a + b were higher than that of the cell group. The Notch1 protein expression of group a + b were higher than that of group b.

Methods 2: Hippocampal neurons were divided into neurons group (cell group), control group (NC group), Notch1 knock-down group (si group) and N1CD overexpression group (Notch1 group). 24, 48 and 72 hr prior and post to the ischemic reperfusion injury, CCK8 assay was performed to evaluate the Notch1 gene sensitivity in each group, the values of which were used to plot the proliferation rate curve and inhibition rate curve. Flow cytometry were used to detect the cell apoptosis rate in each group after ischemia-reperfusion injury. The expression of Caspase 3, Bcl-2 and Bax protein after ischemia-reperfusion injury were detected by Western blotting in each group.

Results 2: 24, 48 and 72 hr after ischemia reperfusion, the CCK 8 value of Notch1 group were higher than those of NC group and the cell group. 24, 48 and 72 hr after ischemia reperfusion, the CCK 8 value of Si group were lower than the cell group and the NC group. The cell proliferation rate of Notch1 group, cell group and control group rose from 24 to 72 hr after the injury, while the si group exhibited a declining curve. The cell inhibition rate of Notch1 group declined, while si group showed an increasing inhibition rate. Compared with blank group, Notch1 group contained less late apoptosis cells and dying cells; si group had more apoptotic cells, late apoptotic cells and dying cells than blank group, but the living cells of si group was less than that of blank group. Compared with blank group, the Bcl-2 protein expression of Notch1 group was increased, while Caspase 3, Bax protein levels were reduced; compared with control group, the Bcl-2 protein expression of si group was decreased, but Caspase 3 and Bax protein levels were increased.

Conclusions: The apoptosis of neuron cell after ischemia-reperfusion injury was reduced by ischemic preconditioning.
HHME16-Z28
THE APPLICATION OF WIRELESS SENSOR NETWORK IN THE MEDICAL INFORMATION SYSTEM

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Objectives: An embedded remote health care system based on wireless sensor network technology is established. Firstly, a new system architecture is proposed which introduces a scalable wireless sensor network with a variety of wireless physiological sensor nodes. Then the designs of several wireless physiological sensor nodes and the care base-station are presented.

Methods: Wireless communication between the sensor nodes and the care base-station is realized with IEEE 802.15.4/Zigbee standard, and the care base—station and the remote central server are connected in one of the following ways, including computing network, GSM short messages and telephone modem.

Results: The system can be used at home or in hospitals to form a remote health care system among home, community and hospital.

Conclusions: The system is good.

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HHME16-Z29
THE STUDY ON THE RESIDENTS’ HOUSEHOLD WASTE SORTING BEHAVIOR IN BEIJING

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Objectives: Although the experimental project of residents’ household waste sorting was carried out early in Beijing, it is difficult to bring satisfactory performance. This study analyzes the factors of influencing the residents’ waste sorting behavior and put forward corresponding strategies.

Methods: The method of Simple Random Sampling is used on urban residents in Beijing and 440 questionnaires are obtained. Factor analysis, regression analysis and other statistical methods are used to analyze the questionnaire data.

Results: The factors of affecting the waste sorting behavior are gotten, including external standard, awareness of environmental protection, behavioral motivation and barriers of residents own influence factors, and system design of external influencing factors.

Conclusions: Based on the above analysis, the relevant policy suggestions is put forward, including improving the waste sorting system, improving the law standard of waste sorting, formulate charge system of household waste and strengthening publicity and education.

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HHME16-Z30
DEVELOPMENT AND APPLICATION OF FIRE SAFETY MONITORING AND EARLY WARNING SYSTEM FOR SMALL AND MEDIUM SIZED HOSPITAL ENTERPRISES

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Objectives: In small and medium sized hospital enterprises design of fire safety monitoring system based on Wireless Sensor Networks.

Methods: In wireless sensor networks based on project needs to realize the function, the overall structure of fire safety, including the coupling data transmission model, network model and fire data between wireless sensor network and TD-SCDMA, the design of small and medium sized enterprise fire security intelligence sensing system.

Results: The sensor network alarm data is connected with the central control center through the TD-SCDMA mobile network, which can realize the remote monitoring and management. Therefore, the wireless sensor network and TD-SCDMA network interface design is the project needs to solve the research content. High reliability fire warning based on digital image processing technology. The algorithm used to identify flame model and smoke model combining the improved fire recognition algorithm of wavelet analysis, Gauss mixture model, RGB model and HIS model based on the establishment of a fire alarm system with high reliability.

Conclusions: In view of the network and its failure outside targeted attacks in two cases, analysis of the project of the wireless sensor network topology, the optimization model of self-organizing network, and propose a modified routing algorithm for sensor networks.

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HHME16-Z31
A SELF-ORGANIZATION AND CONFIGURATION OF WIRELESS SMART SENSOR NETWORKS FOR REMOTE MONITORING SYSTEM OF FIRE CONTROL SAFETY REAL-TIME ONLINE IN HOSPITAL

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Objectives: This paper adopts the digital image processing technology, wireless sensor technology, signal detection and processing technology, pattern recognition and system simulation technology as a support, to develop suitable for small and medium-sized enterprise fire safety monitoring and warning system in hospital.

Methods: This project based on digital image processing technique, combining the research model of flame and smoke model recognition algorithm, improved method based on wavelet analysis, the Gaussian mixture model, the RGB and fire recognition algorithm of the model, to establish a high reliability of fire warning system.

Results: The project adopts the combination of 4 g networks and wireless smart sensing network hybrid networks, efficient and reliable data transmission can achieve breakthrough in the field of heterogeneous network integration technology, conforms to the development trend of the next generation of wireless heterogeneous network.

Conclusions: The key technology of this project study, meet the needs of the small and medium-sized enterprise fire safety conform to the construction of the basic direction of Chongqing. Not only to promote industry technology progress, digital image processing technology, testing technology and intelligent development of wireless network technology is important, also can achieve remarkable economic benefits and good social benefits.

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HHME16-Z33
A QUANTUM GENETIC ALGORITHM FOR EVALUATING AND MONITORING ENVIRONMENT INFLUENCE FACTORS
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Objectives: To measure and monitor harmful and beneficial factors in environment more effectively, we put forward a Quantum genetic algorithm (QGA) to enhance the adaptability of calculation procedure.

Methods: Firstly, a new quantum rotation gate was set up to update quantum chromosome. Secondly, we introduced a new quantum mutation operation to generate individuals of next generation according to the guide chromosome. What’s more, a dynamic population technology was proposed to adjust the population scale of QGA.

Results: The simulation examples are given to verify the adaptability and superiority of the improved quantum genetic algorithm and the rationality of the encoding measurement. There is a 65.8% decrease in environment forecasting error. The convergence speed of the algorithm is improved by 90.5%.

Conclusions: The suggested QGA approach provides us a more intelligent method for evaluating and monitoring environment influence factors. It can help us to improve forecasting efficiency as well as accuracy.

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HHME16-Z34
RESEARCH ON DIGITAL IMPLANTATION OF PAPER EMBEDDED INFORMATION BASED ON HEALTH CONCEPT
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Aims: With the development of national economy, people pay more attention to health problems, which also become the social focus. Because the pattern on the paper is printed with ink, in printing process, inks are harm for people’s health very much. Therefore, it is imperative to study the embedded information in the paper based on the concept of health, this new kind of digital implantation of paper embedded information has been proposed by utilizing digital technology in paper wet forming process to elevate dependability of paper information expression.

Methods: During papermaking process, a certain proportion of magnetic fibers were added into paper pulp and mixed uniformly. A magnetic coding controller was installed on the top of the wire end to act on the magnetic fibers. In a typical encryption process, the input decimal digit was firstly transformed into binary digit and binary digit was utilized to control magnetism of bar code with the help of magnetic coding controller. Then a sliding rail with magnetic coding controller was slid along the flow direction of paper pulp. The magnetic fiber gathered to forming the bar code according to the instruction of magnetic coding controller. Necessary adjustment of the sliding rail is needed to keep the controller with a proper location to make the wet paper sheet stably.

Results: This research proposed a innovative idea of paper anti-counterfeiting technique based on the concept of health. The magnetic bar code forms inside the paper sheet and it is not easy to fake.

Conclusions: This kind of paper information implantation technology provides an advantage of unique identification and distinctive encryption effect.

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HHME16-Z35
HOSPITAL PARKING SPACES DETECTION METHOD BASED ON DISTRIBUTED COLLABORATIVE AWARENESS AND RELUCTANCE WIRELESS SENSOR NETWORK
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Aims: People gather, and mobile phone signals and electromagnetic signals concentrate in hospitals, so the hospital parking space detection will be considerably interfered, contributing to a bottleneck in the parking detection accuracy. This paper aims to enhance the detection accuracy of parking spaces through the detection method of hospital parking spaces based on distributed collaborative awareness and reluctance wireless sensor network.

Methods: In case of low signal to noise ratio (SNR), the hospital parking spaces are accurately detected according to information correlation between nodes of the reluctance wireless sensor network and by integrating the data from multiple nodes.

Results: The detection accuracy of hospital parking spaces are improved through distributed collaborative awareness.

Conclusions: This paper enhances the detection accuracy of hospital parking spaces through adopting the detection method of hospital’s parking spaces based on distributed collaborative awareness and reluctance wireless sensor network.

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HHME16-Z36
A WIRELESS MEDICAL MONITORS SYSTEM BASED ON WI-FI TECHNOLOGY
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Objectives: With the development of wireless technology and people’s attention to health care, wireless medical monitoring has been paid more and more attention.

Methods: An embedded medical monitoring system which the hardware using WI-FI based on the latest IEEE 802.11ac protocol as the core and the software based on embedded Linux is introduced in this paper.

Results: It can get patients’ physiological parameters such as temperature, respiration rate and heart rate etc. In addition, it also holds the function of on-line diagnosis, centralized management, data analysis and so on. The system also considers that some diseases have a sudden, and need to be treated in a timely manner, so it is important to establish a wireless tracking and localization system using multi-hop localization method in the monitoring network.

Conclusions: The system meets the requirements of general hospital, reduces the workload of medical staff, and has good expansibility and wide application prospects.

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CONCLUSIONS: Through the mechanical properties tests, the maximum tensile strength of GF/PVA is about 6.9% lower than the maximum tensile strength of BF/PVA’s. But taking into account the poor water resistance of the BF, it is recommended GF as the preferably selection to modified PVA, which is good to human health and environmental protection.

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HIME16-Z40
PROPERTIES OF WATER RESISTANCE OF THE HEALTHY BIODEGRADABLE MODIFIED POLYVINYL ALCOHOL COMPOSITES
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Objectives: Healthy biodegradable composites have long been a hot topic in the field of environmental protection, and polyvinyl alcohol (PVA) catch much attention because of its excellent adhesive and biodegradability, but its poor water resistance is an import factor to restrict the application, so this paper studied the changes of water resistance of the modified PVA without changing its biodegradability.

Methods: In order to improve the water resistance, the dialdehyde starch (DAS) and dialdehyde carboxymethyl chitosan (DCMCS) were chosen to prepare two types of biodegradable materials, DAS/PVA composites and DCMCS/PVA composites; then, the structure and feature of the composites was characterized by scanning electron microscopy (SEM), thermogravimetric analysis (TGA), Fourier transform infrared spectrogram (FTIR), biodegradability and water resistance.

Results: Through the experiment of soil degradation, the modifiers have little effect on degradation rate, which are reached more than 70% after 120 days; the tests of water resistance show that the water absorption of both composites increases at the first 24 hr, and then the water absorption becomes stabilized, and saturated water absorption of DAS/PVA composites is 31.6% while saturated water absorption of DCMCS/PVA composites was 28.3%.

Conclusions: Through the water resistance tests, DAS and DCMCS added can better enhance the water resistance of PVA; in contrast, DCMCS has more significant improvement of the water resistance to PVA. But GAS has relatively low economic cost, so we should select the modifier according to the needs, and both modifiers are no harm to human health and environmental protection.

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HIME16-Z41
DISCUSSION ON THE DEVELOPMENT STRATEGY OF COMMERCIAL HEALTH INSURANCE
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Aims: Health is the basis of all-round development of people, and it is an important economic factor that affects the development of social economy. Therefore, through the analysis of domestic and foreign commercial health insurance development process and the current...
situation, explore the development path of China’s commercial health insurance.

**Methods:** From the law of the development of commercial health insurance, we summed up the impact of health insurance demand and supply factors by theory, the analysis of the function of commercial health insurance in the medical security system, to explore the law of the development of commercial health insurance. We understand the incentive mechanism for the development of commercial health insurance countries, meanwhile summarized the experience and less of countries’ commercial health insurance. Then analyzed the development course and existing problems of China’s commercial health insurance, and established a model to predict the development prospects of China’s commercial health insurance.

**Results:** We put forward the development of China’s commercial health insurance countermeasures and policy recommendations.

**Conclusions:** These strategies guide and promote the development of China’s commercial health insurance.

HHME16-Z42
DATA ACQUISITION AND ANALYSIS OF THE LOWER LIMBS OF ATHLETES
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**Objectives:** To explore the changes and rules of median frequency of the lower limbs induced by power bicycles under different load, and to analyze the changes of the relevant indicators of surface electromyogram and characteristics of muscle fatigue fitting curves.

**Methods:** Eight young men from Physical Education School of Soochow University were enrolled as subjects. All subjects were subjected to different load and different pedaling frequency exercises using MON-ARK power bicycle until they felt fatigue. At the same time of rectus femoris and vastus lateralis muscles, medial vastus muscle, tibialis anterior, medial gastrocnemius head and gastrocnemius lateral head of surface EMG signal acquisition and recording. The data were analyzed using Minitab 15 statistical software. R^2 was determined according to the F test (extremely significant statistical difference, p < 0.001), and then the experimental results were analyzed using the curve fitting method.

**Results:** (1) Under the 150 W power bicycle movement, the muscle fatigue increased with time and then trended to decrease. (2) Under the 300 W power bicycle movement, the muscle fatigue decreased with time, then showed an increasing trend and finally decreased with time. (3) Under the 150 W power bicycle movement, the fitting curve was a three-item curve, indicating there were three main factors affecting muscle fatigue.

**Conclusions:** However, under the 300 W power bicycle movement, the fitting curve was a two-item curve, indicating there were two main influential factors for muscle fatigue.

HHME16-Z43
PROGRESS OF RESEARCH ON AMPHETAMINE DRUGS AND DETECTION AND ANALYSIS METHOD

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**Objectives:** Progress of research on amphetamine drugs and detection and analysis method.

**Methods:** Amphetamine Compounds Research Literature This paper has made Cluster analysis of development and trend of literature research related to testing of amphetamine drugs (ATS) in recent ten years in China on the basis of referring to a great number of leading and representative literatures both at home and abroad and with adoption of comparative research and empirical research methods; Retrieval statistics has been made for the advanced searching page of CNKI, with retrieval period of ‘2006–2015’, ‘subject’ as retrieval entrance and ‘amphetamine’ and ‘detection’ as key words. There are totally 516 related articles retrieved; analysis and research on database of literature source, number of annual publication, author institution and support fund etc. have been made respectively; at the same time, made comprehensive and systematic discussion on its detection method and formed a relatively complete research system.

**Results:** Made comprehensive and systematic discussion on amphetamine drugs detection method and progress of research, formed a relatively complete research system.

**Conclusions:** The understanding and analysis of the ATS technology still need to continue to deepen and improve, only in this way in the verification of such drugs, to play its due role.

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HHME16-Z44
RESEARCH ON THE HEALTHY DEVELOPMENT OF THE INDUSTRIAL STRUCTURE IN SHAANXI PROVINCE

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**Aims:** With the improvement of living standards and quality, people pay more attention to health problems. However, the change of industrial structure has an impact on China’s economic growth directly, so it is very valuable to explore the healthy development of the industrial structure. And the relationship between industrial structure and environment is affect and interact each other. Therefore, it is very necessary to study the industrial structure and environmental coordination.

**Methods:** After reform and opening policies, industrial structure in Shaanxi province caused a major adjustment. The proportion of primary industry decreased and secondary industry increased a lot. It is important to note that tertiary industry was developing rapidly. To cope with the change a four-step strategy is proposed, first is quickening the pace of agricultural development; second is developing industries with local advantages and improving secondary industry; third is increasing proportion of tertiary industry; last is well-arranged works of environmental protection and treatment.

**Results:** Some opinions of industrial structure adjustment in Shaanxi province were proposed to make guidance of harmonious development.

**Conclusions:** Making industrial structure adjustment will improve a healthy national economy development.

HHME16-Z45
HOSPITAL PARKING SERVICES METHOD BASED ON MOBILE INTERNET AND INTERNET OF THINGS

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**Aims:** The parking spaces of each hospital far outnumber its visits, so each hospital is confronted with the problem of ‘scrambling for parking spaces’. This paper is designed to cope with this problem through the method of hospital parking services based on mobile Internet and Internet of Things.

**Methods:** O2O mode was employed. Offline refers to the hospital parking spaces monitored by Internet of Things, while Online means the mobile APP. That is, users buy hospital parking services online and carry out parking consumption offline.

**Results:** Before driving to the hospital, the users can check whether there is parking space in the hospital, reserves parking space and can quickly find the reserved hospital parking space through mobile navigation.
Conclusions: The methods provided in this paper can help users to save the time of finding hospital parking spaces through convenient payment.

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HHME16-Z46
ANALYSIS OF CHEMICAL COMPONENTS OF DANDELION FLOWER BY GC-MS
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Objectives: In this study, we choose ultrasonic-assisted extraction method to extract the chemical composition from Dandelion flower and analyzed by GC-MS. This study provided a theoretical reference for medical and pharmacological research.

Methods: The chemical constituents of Dandelion flower were extracted by ultrasonic-assisted extraction method, GC-MS was used to analyze the chemical composition of Dandelion flower and peak area normalization method was used for quantification.

Results: Totally 27 compounds were separated and identified, accounting for 95.57% of the total separated compounds. The major compounds identified were 12-O-oleanen-3-ylacetate, (3a)(14.64%), β-Sitosterol (6.61%), Sulfurous acid, pentadecyl, 2-propylester (6.48%), a-Amyrin (5.87%), Nonadecane, 2-methyl (5.86%), stigmasterol (5.15%), Germanicol (4.74%), Euparone (4.6%), Chenodeoxycholic acid (3.85%), Menthylacetate (3.72%), Urs-20-en-3-ol, (3β,18a, 19a)-3(14.64%), etc.; Other types: Euparone (4.6%), etc.

Conclusions: The chemical compositions of Dandelion flower were extracted by ultrasonic assistant extraction and analyzed by gas chromatography–mass spectrometry (GC–MS).

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HHME16-Z47
RESEARCH ON THE HEALTHY AND HARMONIOUS DEVELOPMENT OF INDUSTRIAL STRUCTURE AND TECHNOLOGICAL PROGRESS IN SHANXI PROVINCE
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Aims: Industrial structure pattern in Shaanxi province realizes rapid development of secondary industry. In terms of overall development, tertiary industry would improved when secondary industry created adequate social wealth. The healthy and harmonious development of industrial structure and technological progress, not only can promote the improvement of productivity, but also can realize the comprehensive optimization of the industrial structure.

Methods: In 21st century social economy and science keeps a rising speed of development. Facts proved that every time of science improvement promotes perfection and renewal of industrial structure. Horizontal analysis of harmony between industrial structure and technological progress has been presented. In general, industrial structure and technical progress keeps a high-level development in the whole system. Secondary industry plays a vital role while tertiary industry plays a complementary role and at an earlier stage.

Results: Technical progress system in Shaanxi province possesses nice and healthy development trend and the whole industrial structure and technical progress realizes effective improvement.

Acknowledgements: A construction goal of innovation province will be proposed and it will caused effective reinforcement of technological competitiveness in Shaanxi province.

Acknowledgements: The system aforementioned is under the support of: Special Research Project of Shaanxi Provincial Education Department (16JK2017, 16JK2018).

HHME16-Z48
PROGRESS IN META ANALYTIC STUDY ON THE APPLICATION OF BIOMEDICAL FIBRIN GLUE IN OPERATIONS
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Objectives: To evaluate the safety and effectiveness of the biomedical fibrin glue in the application of different kinds of operations based on Chinese database system.

Methods: Retrieve the existing literature regarding Meta analysis and study on the application of biomedical fibrin glue in operations published so far in CNKI Database, WanFang Database, VIP information resource system and Chinese biomedical document database.

Results: According to the Meta analysis results of totally 3149 patients in 33 studies on various operations, including operations on breast cancer, thyroid, joint and conjunctiva transplantation, compared with the control group, the use of biomedical fibrin glue can reduce the amount of postoperative drainage, total blood loss and hemoglobin loss; moreover, the postoperative effusion rate is better than that of the control group. At the same time, the postoperative complications are not increased.

Conclusions: On the basis of shortening the operation time, the application of the biomedical fibrin glue in various operations can help reduce the amount of drainage and postoperative complications, which is safe in use.

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HHME16-Z49
PRECISION MEDICAL MODEL RESEARCH BASED ON THE USER PORTRAIT
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Objectives: In order to promote the implement level of precise medical and provide a method for medical website operation.

Methods: Data analysis.

Results: Under the background of data explosion, big data thinking gradually penetrated into health and medical industry. This paper constructs the ‘user portraits’ database, and segments medical consumer through the database mining, on this basis, the paper structure precision medical model, the object of research is users’ information from 39 Health Network, using the Python language to dig the subdivision factors – diabetes.

Conclusions: The study shows in the era of big data health, precision medical model based on the ‘user portrait’ database mining can meet the needs of the medical consumer, precise positioning medical consumer groups, and provide a scientific basis for health websites in order to implement precise medical.
HHME16-Z50
RESEARCH ON THE CONSTRUCTION OF PUBLIC PROJECT PERFORMANCE AUDIT EVALUATION INDEX HEALTH SYSTEM
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Aims: In recent years public construction investment has become a main investment direction in China. However, a series of problems such as unpleasant investment performance, serious waste phenomenon and low-level overlapping investment emerged. Therefore, it is very necessary to study the construction of public project performance audit evaluation index health system.

Methods: In general, performance auditing evaluation is investigating economical efficiency of public construction by audit institution or staff. The division of performance auditing contains three different stages. The first is project approval stage and a whole plan in public construction is needed in this stage. The second is construction stage. In this stage implementation situation and different environmental change should be evaluated. The last is operation stage. When the public construction is completed, economic benefit and social benefit is required.

Results: A whole performance auditing evaluation index health system in public construction is established. Proper performance auditing evaluation will cause lots of benefits to construct satisfactory public works.

Conclusions: Public construction is a great boon to people. Performance auditing evaluation index health system will meet the need of modernized development and produce better economic social benefit.

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HHME16-Z51
THE MENTAL DISEASE PREVENTION RESEARCH OF COLLEGIANS BASED ON DM
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Objectives: In order to lead a much more faster development of data mining and promote the research level of big data technology in mental health aspect.

Methods: Literature review and document analysis.

Results: This paper discusses the details and forming reasons of the college student’ mental disease, in the same time, explores the states of autism in a university of Guizhou province by combined the thinking ways of big data and analysis results of the data show from the campus card. The meaning of this article is to discover the mental disease of some collegians in time and propose a prevention mechanism, call on all educators of the college to strengthen the psychological education to the collegians in a mean time through analysis of data.

Conclusions: The explosion shows that in a era of big data the proposing of prevention mechanism based on DM could satisfied the requirements of collegians in mental health management aspect and able to lay the foundation of colleges to strengthen and innovate the education of psychological health.

HHME16-Z52
DIAGNOSES ABOUT MENTAL HEALTH OF MANAGEMENT PERSONNEL IN ECONOMIC UNIVERSITY LABORATORY EQUIPMENT
Qing C., Li S., Xia H., Yu X.M.
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Objectives: Explore the condition and influencing factors about psychological health of university laboratory equipment management personnel.

Methods: 120 economics university laboratory management personnel (research group) and 120 teachers in financial and economics universities (control group) are investigated, evaluated and compared by the symptom self-assessment scale, social support rating scale, family stress and working pressure self rating scale.

Results: Somatization factor points in the self-assessment lists of symptom assessment team was higher than the control group’s ($p < 0.05$). Other factors points was no significant difference ($p > 0.05$). About social support rating scale general comment average points, objective support points, experimental group points was significantly lower than control group’s ($p < 0.05$). As to the working pressure self-assessment scale, two groups were not significant difference ($p > 0.05$). About the family pressure scale scores, experimental group points was higher than the control group’s ($p < 0.05$).

Conclusions: Economics university laboratory management personnel’s psychological health level is lower than the teachers in universities. We should not ignore Laboratory management personnel’s mental health problem. It is necessary to further explore mental health and health care policies, which suitable to economics university laboratory management personnel.
human sub-health state. Appropriate changes can also be applied to other medical testing predictions.

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HHME16-Z67
THE APPLICATION FOR PITCH FREQUENCY AND FORMANT FEATURES OF SPEECH SIGNAL IN THE DEPRESSION DETECTION
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Objectives: As of the traditional depression diagnosis method is based on the scale table of the HAMD and BDI, also the subjective judgment of the clinicians, existence of false positive rate. Consequently, on the basis of the existing modern speech signal processing, a method is proposed in this paper.

Methods: According to the depressed characteristics of voice is ‘lifeless’ and ‘apathetic’, compared the differences with other emotional voice on vocal quality, fluency and prosodic features. Introduced spectrum subtraction power correction factor and noise reduction coefficient to enhance depressed voice signal, extracted pitch frequency features with large variation rate and formant features with significant difference by using cepstrum method. The method also analyzed the characteristics of Mel-frequency cepstral coefficient and energy and identify accordingly with convolutional neural network.

Results: The experimental results show that the proposed method well performs on identify the depression voice by comparing normal, fear and depression. The recognition accuracy rate attains 75%.

Conclusions: Compared to the existing doctor’s accuracy rate of 47.3%, the accuracy can bring extra 38.95% improvement by combing with the proposed method of this paper. Additionally, it can easily apply to the hardware and software on the existing hospital instruments with low cost.

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HHME16-Z68
CONSTRUCTION OF THE LIFE SCIENCE INFORMATION RESOURCE PLATFORM BASED ON INDIVIDUALIZED DEMAND
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Objectives: The construction of the life science information resource platform based on individualized requirement is conducive to the deficiency of the purchase of the resources of the library. Also can improve the overall construction level of the life science information resources of Jilin Agricultural University.

Methods: To collect and order the life science information resources that can be read and downloaded on the Internet for free and those purchased by Jilin Agricultural University library. Then, on the basis of the individualization requirement of users and the characteristics of related resources, classify and integrate the resources that were collected to build a platform for life science information resources.

Results: After the life science information resource platform that has been constructed link to the information service supermarket of library and teaching resources page, it will provide a convenience for the teachers and students to search resources.

Conclusions: The construction of the life science information resource platform, not only enriches the information resources of the subject and deepen the connotation of service, but also provide a one-stop retrieval platform for experts and students of the subject. Besides, the ability to guarantee the literature of this subject and the standard of knowledge service also be improved. All of these results can provide useful references for deepening the reform of colleges and universities.

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HHME16-Z78
AN EFFECTIVE METHOD FOR FEATURE EXTRACTION AND LESION AREA LOCATION OF LIVER CT IMAGE
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Objectives: This paper provides an efficient method to extract the features of the liver CT images and then distinguish whether the liver is normal. The method will provide an auxiliary reference for the subsequent diagnosis.

Methods: Due to the low contrast of surrounding tissue or organs of liver and the highly difference between each individual, it is difficult to distinguish the presence of abnormalities from liver CT images with the naked eye only. The paper proposes a Scale Invariant Feature Transform (SIFT) and Generalized 2 Nearest Neighbors (G2NN) test to adaptively extract the efficient feature or keypoints. The highlighted keypoints is employed to locate lesion areas. The Delaunay triangulation is employed to replace the present segmentation methods, such as gray intensity, for the better CT images segmentation and more accurate marking.

Results: A series of experiments on liver CT images demonstrated that the proposed method is robust to the location and distinction of the lesion areas. The precision and recall of the detection is much better than the gray intensity method.

Conclusions: The paper proposes a robust SIFT and G2NN test to adaptively extract the efficient feature or keypoints. And then, The Delaunay triangulation is employed for CT images segmentation. The experimental results show that the precision and recall of the lesion area detection is much better than the relevant state-of-the-art methods.

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HHME16-Z79
CAPSAICINOIDS INCREASE H4 ACETYLATION AT LYSINE 16 OF GLIOMA C6 CELLS
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Aims: Capsaicinoids, including capsaicin, Capsaicinoids, homocapsaicin, homoCapsaicinoids, and norCapsaicinoids, are the main active components of red peppers. The acetylated histone H4 lysine 16 (H4K16ac), regulated by the histone acetyltransferase hMOF, is bound with transcriptional activation, and involved in several types of cancer. Here, we studied the regulation mechanism of Capsaicinoids on H4K16ac.

Methods: Capsaicinoids crushed almond red peppers with supercritical CO2 was performed at 300 bar and 40°C. Capsaicinoids were dissolved in DMSO, added to the RPMI-1640 medium. Glioma C6 cells were treated with Capsaicinoids at different concentrations for 48 h, Then harvested for western blot assay or immunofluorescence staining.
Conclusions: The results of western blot assay and immunofluorescence staining displayed that Capsaicinoids obviously improved H4K16ac of Glioma C6 cells in a dose-dependent manner, and the expression of hMOF was raised up at the same time. Capsaicinoids efficiently increase the level of H4K16ac in Glioma C6 cells may through up-regulate the expression of hMOF.

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HHEME16-Z80
RESEARCH ON THE DEEP HOLE AND COMPLEX CAVITY PROCESSING TECHNOLOGY OF A HIGH-STRENGTH STEEL PART IN MEDICAL DEVICES
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Objectives: According to the machining performance of high-strength steel, the deep hole drilling, reaming and complex cavity machining of a high-strength steel part in medical devices are studied. The effective deep hole and complex cavity machining strategies for the part are presented.

Methods: The high-strength steel part is processed and tested on different machine tools using different deep hole drilling tools and blades. The deep complex cavity processing technology of the part is studied on a separate CNC deep hole drilling and boring machine. A special tool for deep hole cavity machining is introduced.

Results: The deep hole drilling and reaming tools, blade material and cutting parameters are optimized so as to improve the processing efficiency and surface quality of workpieces, extend the service life of the tools, and thereby reduce production and processing costs.

Conclusions: On the basis of the researches on high-strength steel deep hole drilling, reaming and complex cavity machining experiments, the optimal parameters obtained in the processing experiments are applied to the part machining, which solves its manufacturing bottleneck.

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Conclusions: The local damage detection method, through acoustic emission, is conducive to determine the stress concentration as well as the vulnerable area of the structure. And by surface positioning mode with four probe arrays, combined with local damage source localization analysis, the accurate positioning for damage can realize.

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HHEME16-Z82
FAULT DIAGNOSIS AND PERFORMANCE DEGRADATION ASSESSMENT OF MEDICAL EQUIPMENT BASED ON COUPLED-HIDDEN-MARKOV MODEL
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Objectives: If it is able to monitor the performance of the medical equipment in the process of degradation, the equipment maintenance plan will be made targeted, so as to effectively prevent the failure of equipment. Coupled-Hidden-Markov model is a kind of probabilistic model for multi-channel data modeling, based on which will contribute to the fault diagnosis and performance degradation assessment.

Methods: When Coupled-Hidden-Markov model (CHMM) is introduced into the multi-channel fault diagnosis of medical equipment, the fusion fault diagnosis method based on CHMM is proposed. The fault diagnosis is carried out by using the vibration signal from the horizontal and vertical directions of the medical equipment with two chains.

Results: The Bayesian network structure limits the multi-channel information fusion. By using the Coupled-Hidden-Markov model with two chains to analyze the vibration signal of the horizontal and vertical of medical equipment, the fault diagnosis of medical equipment can be completed.

Conclusions: The use of information fusion technology, to carry out comprehensive treatment of multi-channel information, will make it possible to acquire more accurate fault diagnosis results in the absence of data, so as to make right decision to maintain. It is helpful to improve the accuracy of medical equipment fault diagnosis.

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HHEME16-Z81
STUDY ON ACOUSTIC EMISSION CHARACTERISTICS AND SOURCE IDENTIFICATION OF CRITICAL STRUCTURAL PARTS OF LARGE MEDICAL EQUIPMENT
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Objectives: Large medical equipment has high automation degree and complex structure. To study on the acoustic emission characteristics and source identification methods, can help to identify the yield deformation and fracture damage for the key structure of large-scale medical equipment, and can effectively predict the damage, to achieve early warning and forecasting of structural damage.

Methods: Using acoustic-emission-detection point optimization method, combined with the loading stress experiment and the analysis results to determine the stress concentration, the vulnerable position will be detected. On this basis, the acoustic emission testing scheme can be implemented, by four-probe-arrays acoustic emission positioning method.

Results: Fault simulation and bearing load test validate that the method is suitable for damage source detection for the key structure of large medical equipment. Using four probe arrays can achieve the acoustic emission localization of local damage.

Conclusions: The use of information fusion technology, to carry out comprehensive treatment of multi-channel information, will make it possible to acquire more accurate fault diagnosis results in the absence of data, so as to make right decision to maintain. It is helpful to improve the accuracy of medical equipment fault diagnosis.

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HHEME16-Z83
DEVELOPMENT OF A DIGITAL MANAGEMENT SYSTEM FOR KNOWLEDGE OF 3D PRINTING PROCESS OF ARTIFICIAL TEETH
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Objectives: This paper introduces the development process of a digital management system of 3D printing process knowledge of artificial teeth, including the design of database development and the front-end interface.

Methods: The requirement of the 3D printing process of artificial teeth is analyzed, and the digital management system of the process knowledge is required to achieve specific functions and have friendly man-machine interface. And the system design objectives are made, and the system design principles are determined. Access database is selected as the system background database, and Basic Visual 6 is selected as the system development tool to design front-end interface. The frame structure of the digital management system of the process knowledge is designed, and the flow chart of the system is drawn. The function modules of the digital management system of the process knowledge management system are developed.
Results: The system can realize the function of the system login, register, input, modify, query and delete. It also introduces the development process of knowledge database for 3D printing process of the artificial teeth.

Conclusions: The establishment of the digital management system can achieve management and arrangement of the 3D printing process knowledge of the artificial teeth.

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Conclusions: In the temperature range of 210°C–280°C of the spray nozzle, the best temperature is determine for the 3D printing of the artificial teeth.

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HHME16-Z84
INFLUENCE OF AMBIENT TEMPERATURE ON THE ACCURACY OF ARTIFICIAL TEETH IN DENTAL MATERIAL 3D PRINTING
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Objectives: In the 3D printing of artificial teeth, the ambient temperature is a very important element that affects dental material performance and the accuracy and performance of the printed artificial teeth.

Methods: Based on the 3D model of a artificial tooth, the layer thickness of 3D printing is 0.2 mm, the extrusion velocity is 59.4 mm/s and the filling speed is 60 mm/s. The adjustable ambient temperature range of a BOX 3D rapid prototyping machine is 50°C–80°C. The ambient temperature is set at different temperatures and the artificial teeth are printed while the other 3D printing parameters are keep invariable. Then, the accuracy and performance of the printed workpieces are checked and compared.

Results: When the ambient temperature of 3D printing of the artificial teeth is too high, the printed workpieces are prone to wrinkle although it is helpful to reduce the internal stress of the printed workpieces. When the ambient temperature is too low, it leads to poor bonding and warping of the printed workpieces while it accelerates the cooling speed of the printed workpieces.

Conclusions: In the ambient temperature range of 50°C–80°C, the best temperature is determine for the 3D printing of the artificial teeth.

Acknowledgements: This research was financially supported by a project grant from Education Department of Shaanxi Provincial Government (Grant No. 15JS041) and a project grant from Shaanxi Science and Technology Plan (Grant No. 2014KTCQ01-22).

Conclusions: In the temperature range of 210°C–280°C of the spray nozzle, the best temperature is determine for the 3D printing of the artificial teeth.

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HHME16-Z85
INFLUENCE OF SPRAY NOZZLE TEMPERATURE ON THE ACCURACY OF ARTIFICIAL TEETH IN DENTAL MATERIAL 3D PRINTING
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Objectives: In the 3D printing of artificial teeth, the temperature of the spray nozzle of a rapid prototyping machine affects dental material performance. Furthermore, the dental material performance affects the accuracy and performance of the printed artificial teeth.

Methods: Based on the 3D model of a artificial tooth, the layer thickness of 3D printing is 0.2 mm, the extrusion velocity is 59.4 mm/s and the filling speed is 60 mm/s. The adjustable ambient temperature range of a BOX 3D rapid prototyping machine is 50°C–80°C. The spray nozzle is set at different temperatures and the artificial teeth are printed while the other 3D printing parameters are keep invariable. Then, the accuracy and performance of the printed artificial teeth are checked and compared.

Results: When the temperature of the spray nozzle is too high, the printed profiles are prone to collapse and damage. Hence, it is difficult to make the artificial tooth. On the contrary, when the temperature of the spray nozzle is too low, it is prone to block the pipe and spray nozzle of the machine. At the same time, gaps appear between layers and the strength of the printed artificial teeth is poor.

Objectives: Evaluation system of VSD nursing quality was built, quality management mode of clinical pathway was designed. These patterns can normalize the nursing supervision of VSD treatment and health education behavior of nursing. The research can provide standard guidance and scientific basis for comprehensive nursing of explosion injury and infection injury.

Methods: 50 patients who agree to join clinical nursing pathway in 2013 were selected as experimental group, 50 traditional nursing patients who were carried out VSD treatment in 2102 were selected as control group. EMR and VSD treatment records were consulted, clinical data were collected and analyzed. The health knowledge, self-responsibility sense, health responsibility etc. indexes were carried out effectiveness evaluation.

Results: Gender, age, disease, standard of culture between experimental group and control group don’t have statistical differences (p > 0.05). The health knowledge (55.47 ± 4.41 versus 45.54 ± 8.24), self-responsibility sense (25.53 ± 1.60 versus 20.76 ± 2.64), health responsibility (26.12 ± 7.21 versus 23.68 ± 2.90), pressure treatment (23.96 ± 2.14 versus 22.63 ± 2.26) and the satisfaction (3.80 ± 0.39 versus 3.23 ± 0.73) of experimental group patients exceed control group (<0.01).

Conclusions: The clinical nursing pathway for the drug quality quantitative analysis process and an analysis of the pointcut of the study, and combining an explanation for the drug quality quantitative analysis methods.

Methods: Taking a brief introduction of drug quality quantitative analysis for the pointcut of the study, and combining an explanation for the drug quality quantitative analysis process and an analysis of
Bayesian Network, the paper investigates the implementation of Bayesian network.

Results: This paper presents a Naive Bayesian classification algorithm based on genetic algorithm and applies it in the Chinese text classification. The experiment shows that the parameters of this Naive Bayesian classification algorithm have a strong self-adaptive ability. And it can effectively improve the classification accuracy.

Conclusions: At the same time, however, the algorithm will waste a certain time at some extent relative to Naive Bayesian classification accuracy. So we will need to further optimize them to improve system performance.

HHME16-Z96
A NEW EVALUATION METHOD OF INWARD-PORT SINGLE BLOOD TRACK BASED ON HEART SIMULATOR
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Objectives: In practice, the evaluation of blood track is always determined by the expert experience based on the qualitative information. This paper presents a new approach to evaluate the inward-port single blood track quantitatively based on a blood simulator.

Methods: First, a blood tracking points generating algorithm is proposed to generate sufficient track points in order to address the issue that the sample information is not enough on the blood simulator. Secondly, three reference track belts are established based on the sample data and cloud drop contribution degrees for the scenario that the collected sample information is enough.

Results: A quantitative score evaluation method that combines the qualitative information and the quantitative information is proposed, by combining the reference blood track belts with the similarity of cloud, integrating the expert’s experience information, and comparing the similarity of selected track lines with different algorithms.

Conclusions: The similarity measurement results show that the MES (Modified Expectation Surface) algorithm is more reasonable. In addition, the evaluation results of inward-port single blood track shows that the proposed method is effective when applied to quantitative evaluation problems.

HHME16-Z102
A BIOCOMPATIBILITY EVALUATION METHOD FOR MEDICAL TITANIUM ALLOYS
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Objectives: For the problem of lacking biocompatibility evaluation criteria occurred in the practical application of medical titanium alloy materials, the corresponding evaluation method is researched with the object to establish a way to effectively estimate the biocompatibility of the current medical titanium alloy materials according to their medical usage.

Methods: After the Medical Titanium Alloys materials are classified according to their medical usage and manufacturing methods. The qualitative biocompatibility level evaluation of medical titanium alloys materials is firstly defined according to the biological toxicity of each kind of medical titanium alloy. Then, the quantitative biocompatibility evaluation method of medical titanium alloys materials is defined by the similarity between the medical titanium alloy materials and the corresponding human body tissues according to their mechanical properties, such as, elastic modulus, dynamic strength, mechanical properties, Poisson ratio, etc.

Results: For the current researched medical titanium alloy materials, the corresponding qualitative biocompatibility level evaluation and the quantitative biocompatibility evaluation method is established. Based on the researched evaluation method, the medical titanium alloy materials can be evaluated quantitatively according to its biocompatibility so that the medical titanium alloys materials can be managed scientifically and used accurately.

Conclusions: In addition to solving the problem of lacking biocompatibility evaluation criterion occurred in current production and application of the medical titanium alloy materials, the research results of this paper can also be used as the biocompatibility technical standards for the development, production and procurement of the medical titanium alloy materials.

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HHME16-Z109
RESEARCH ON MODEL OF HOSPITAL GERMS PROPAGATION
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Objectives: As a kind of typical social phenomenon, virus propagation means, such as the transmission have undergone great changes in the modern society. Especially in now computer germs media rapid development period, virus spread process becomes complicated, for the identification and control of Internet virus become public opinion attention by the public security department. virus is similar to virus in transfer methods, with reference to the model of spread of infectious disease. In the era of vigorous development computer germs media, virus propagation procedure becomes more complex, faster, and more dangerous.

Methods: Correspondingly, the subjects were divided into heard-virus, non-heard virus. virus of computer germs of evaluation level evaluation index system is established based on a specific assumption.

Results: The identification and control of Internet virus is important to related net-check departments.

Conclusions: This paper establish an index system to evaluate the level of hospital germs virus and virus credibility index system according to characteristics of virus propagation, and analysis the advantages and disadvantages of the models through experimental verification.