The changes of the frequency specific impedance of the human body due to the resonance in the kHz range in cancer diagnostics

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Abstract. The frequency-specific absorption of kHz signals has been postulated for different tissues, trace elements, vitamins, toxins, pathogens, allergens etc. for low-power (μV) signals. An increase in the impedance of the human body is observed only up to the given power of the applied signal. The highest amplification of the given signal being damped by the body makes it possible to determine the intensity of the given process in the body (e.g. amount of the toxin, trace element, intensity of the allergy) being connected with a given frequency spectrum of the signal.

The mechanism of frequency-specific absorption can be explained by means of the Quantum Field Theory being applied to the structure of the water. Substantially high coincidence between the frequencies of the rotation of free quasi-excited electrons in coherent domains of water and the frequencies being used in the MORA diagnostics (Med-Tronic GmbH, EN ISO 13485, EN ISO 9001) can be observed. These frequencies are located in the proximity of $f=7kHz \cdot i$ (i=1,3,5,7,...). This fact suggests that the coherent domains with the admixtures of the given substances create structure-specific coherent domains that possess frequency-specific absorption spectra.

The diagnostic tool called “MORA System diagnosis” was used to investigate 102 patients with different types and stages of cancer. Many signals were observed to be absorbed by many cancer patients, e.g.: ‘Cellular defense system’, ‘Degeneration tendencies’, Manganese, Magnesium, Zinc, Selenium, Vitamin E, Glutamine, Glutathione, Cysteine, Candida albicans, Mycosis. The results confirm the role of oxidative stress, immunological system deficiency and mitochondria malfunction in the development of cancer.

1. Introduction
Today cancer is commonly considered a serious illness being the cause of high mortality in the contemporary society and measures taken in order to treat cancer are found to be rather unsatisfactory. It may come from the fact that the knowledge of biochemical and biophysical processes taking place in a cancer cell is insufficiently considered.

One of the problems connected with biochemical diagnostics of cancer is lack of the methodology of the analysis of different metabolites inside the cells in public medicine. The concentration of e.g. the Krebs Cycle metabolites, amino acids, trace elements and vitamins inside the cells cannot be
commonly measured by using the available methods. Concentration of the substances in blood does not reflect its concentrations inside the cells.

One of the possible solutions of this problem is the use of a spectrum-specific increase in impedance of the human body in the area of the kHz. This method is applied e.g. in the MORA System Diagnosis device.

2. The fundamentals of the MORA diagnostics
Franz Morrel and Emil Rasche observed 40 years ago that a human body possesses the ability to increase the impedance in the range of kHz for the signals possessing very small amplitudes and being the representation of emission spectra of different allergens, trace elements, vitamins, amino acids, tissues etc. These signals can be registered by using very sensitive analogue-digital cards if the external electromagnetic fields are diminished by using the Faraday box and by introduction into the AC-card the differential signal between the empty electrode and the electrode on which the given substance is placed. The signal conduction through the body gives the effect of an increase in the impedance by 10%-30% if the pathology being connected with the given substance exists in the body (e.g. allergy for the given substance, the lack of the given trace element, the charge of the organism with the given toxin, the illness of the given tissue). This increase of the impedance is observed, however, only up to the given amplification of the signal power. If the amplification increases over the given level, the effect vanishes. The maximal amplification level for which the increase of the impedance is observed refers approximately to the intensity of the given process. Therefore, it can be concluded that the effect of energy absorption possesses the resonance basis. The amount of energy the tissue is able to absorb by using the resonance effect is limited and the energy exceeding this level goes through the body without absorption.

However, what seems important to stress, trials to register the spectra of the given signals have not been fully successful until now. The Fourier spectra do not possess any peaks for the given frequencies. Every signals look like the noise. Assuming that the spectra are nevertheless specific, three possibilities should be considered as the reason for this effect.

1. Spectra possess many tiny peaks that are not significantly higher than the level of the noise in the Fourier spectrum. The mean absorption of energy for only slightly higher amplitudes than noise gives the total observed effect of an increase in the impedance by 10-30%.

2. The emitted registered signals are periodic but they do not possess the shape of a sine. The peaks of such signals are not directly visible in the Fourier spectrum but are spread over many frequencies. The information is stored especially in the phase relations between the neighbouring and harmonic frequencies. This thesis is promoted by Galle [1]. The exemplary phase spectra presenting the significant phase relations between the successive frequencies in the Fourier spectrum of the specific water solutions are presented by Ludwig [2].

3. The signals that are emitted and registered are non-linear from the viewpoint of the deterministic chaos theory. The fluctuation of energy between different excited states in the complex systems possessing many regulatory elements, as the biological ones, can be chaotic. It means that the signals are at most quasi-periodic and regular only to some degree. The complexity of such signals can be estimated by using e.g. modified Takens-Elíner algorithm [3]. The information is also stored in the mutual phase relations between the frequencies in the Fourier spectrum. Application of these signals into the body would repeat the way of the energy fluctuations between different ground and excited states of the biological systems absorbing the energy in the non-linear way. This hypothesis may be partially supported by the results from the estimation of dimensional complexity in the magnetic field fluctuation of myomas at a frequency range of 1-100Hz [4].

If the reason of the observed increase in impedance depends on the phase relations (like presented in points 2 or 3) then the information can be destroyed by the phase randomization of consecutive frequencies in the Fourier spectrum and this procedure should annihilate the effect of an increased impedance of the signal even if the amplitudes of consecutive frequencies are the same.
2.1. The postulated range of frequency applied in the MORA diagnostics

The Mora device is able to perform the phase-constant amplification of the signal in the frequency range of 1Hz-150kHz. The range of frequency that is responsible for the absorption of energy in the signals representing some allergens was investigated indirectly by using signals filtering. The resonance for the given signals was observed after applying different low- and high-pass filters. The lower frequency range of the resonance effect can be determined by using the gradual increase in the filter frequency of the high-pass filters and looking for the vanishing of the resonance. Similarly, the upper resonance range can be determined by using the gradual decrease in the filter frequency of the low-pass filter applied.

These ranges are described as [5,6]:
- syntetic substances (e.g. formaldehyde, preservatives, heavy metals): 7.6 - 13.5 kHz
- simple living organisms (bacteria, fungi, vires): 22 - 34 kHz
- food products: 49.5 - 53.5 kHz

Spectrum of all signals is postulated to be below 70kHz.

2.2. The possible mechanisms of energy absorption

Wolfgang Ludwig postulated that water is responsible for the energy absorption [2]. Water clusters can take different structures depending on the substances being in contact with water molecules. Not only did Wolfgang Ludwig present the exemplary spectra of the solutions of some substances and low-potency homeopathic drugs that possess the characteristic peaks in the range of 10^2-10^4 Hz. He also suggested that high potency homeopathic drugs possess the resonant frequency in higher frequency range of about 10^4-10^5 Hz and the phase relations between neighbouring frequencies are probably the characteristic features of these spectra.

The thesis according to which water is responsible for the absorption of energy in the MORA diagnostics can be supported by the Quantum Field Theory being applied to the water structure by E. del Giudice [7-9]. According to presented calculations, the atoms oscillate between two levels in tune with the non-vanishing electromagnetic field so that the field is trapped within the region whose size is \( \lambda \). It is the size of the water coherence domain (CD) being equal to about 100nm. The number of water molecules in CD is postulated to be about 10^7. About 13% of electrons in the CD’s are quasi-free and they can be put in rotation within the CD. These electrons are in the excited states and the frequency of rotation is postulated to be \(~7, 21, 35, 49...\) kHz. Since the motion is frictionless, the lifetime of these excited levels is quite long. One can see that these frequencies correlate strongly with frequencies presented by the authors of the MORA device in the previous subsection. The admixture of the given substances to water CD’s or the contact of water CD’s with the specific proteins may force the appearance of both specific structure of the CD’s and specific level of the excited states of these quasi-free electrons.

The tubular structures in the water corresponding to the ones postulated by del Giudice CD’s that should appear in contact with the isolated molecules were photographed by Shui Yin Lo by using the electron microscopy (3-D conformation and packing of IN Crystals mica surface with NanoScope@ Multimode AFM in TappingModeTM. AFM is a high resolution technique for studying surface) [10,11]. This observation also supports the possible role of water as the frequency-specific energy absorber of MORA signals.

On the other hand, Smith proposes that arithmetic and logic operations could be performed on the frequencies imprinted into water [12]. He postulates the existence of the memory in living systems based on the assumption that DNA and water is quantum holographic and syntactic with the information encoded in phase and operations modelled on computer ‘re-write’ systems with a ‘nil-potency’ rule [13]. The bandwidth of the frequency range being possible to imprint into water is supposed to be from 1 to 10MHz.
What is next important to realize, in the case of trace elements or vitamins both its overdose and deficiency lead to the resonance effect. This fact can be also treated as the resonant effect of the specific water structure. As it is postulated by Froehlich [14,15], large dipoles (e.g. enzymes and co-factors) may attract in the cytoplasm due to common electromagnetic vibration frequency. Water surrounding both the enzyme and co-factor may possess the same frequency of the excited states of quasi-free electrons. If the concentrations of enzymes and co-factors are equal, there are no free enzymes and free co-factors in the cytoplasm and no water structures would occur on the unfitted enzymes or co-factors that could be responsible for the absorption of the energy (see Fig.1). If the concentrations are not equal then the resonance is caused by the water surrounding the overdosed element of this equilibrium.

**Figure 1.** The mechanism shows that both deficiency and overdose of cofactor may lead to the resonance effect. Water being in contact with the overdosed element of the pair enzyme-cofactor may be responsible for the absorption of signal energy.

2.3. The impedance of human body in the kHz range

The problem of the absorption of kHz alternate electric currents (AC) by human body must be analyzed mainly in the context of the permeability of lipid membranes in this frequency range. The capacitance of lipid membranes is equal to about $C=10\text{mF/m}^2$. The accurate value depends on the amount of the immersed proteins. This value is relatively high due to very low thickness of the membrane and high electrical permeability of the lipids used for building it. As it was measured, the lipid membranes are to small degree permeable for AC in the kHz range. The signal running through the body is conducted mainly via extracellular fluid and only to some extent through the inside of the cells. The percentage of energy in ~10kHz signal that is absorbed inside and outside the cell is difficult to estimate precisely because of high complexity of the system of lipid membranes that modify the flow of this current. However, on the basis of the total resistance and reactance of the human body, it can be stated that the amount of energy that is absorbed in the cell inside is equal to about 10-30% and in the outside – 70-90%. This observation coincides with an observed increase of the impedance of the signals observed in the MORA diagnostics. On the other hand, assuming that it is possible to transfer water through the lipid membrane without changing its structure, to some extent the extracellular fluid can be also responsible for the absorption of energy. The quantitative analysis of this problem should be performed both in the theory and practice.

3. Biochemical and immunological aspects of the cancer

The Mora diagnosis device is able to find many biochemical aspects of the organism. Some aspects described in the biochemical and cancer journals are mainly focused on the topics that deal with cancer. The current paper compares the knowledge concerning these aspects with the results obtained by using MORA diagnostics.

3.1. Mitochondria and oxidative stress

Otto Warburg was the first researcher who investigated the biochemistry of cancer cells. He discovered that the cancer cells do not use the oxygen even in the existence of the oxygen in the cells
This phenomenon is called the Warburg effect and it is observed to be a common feature of majority of cancer types. Many contemporary experiments show that the malfunction of the mitochondria may be the reason for this effect. The decreased activity of tricarboxylic acid cycle (TCA) enzymes and the oxidative phosphorylation cytochrome chain (OXPHOS) can be found in the specific types of cancers. One of the most common features of cancer is the decreased activity of pyruvate dehydrogenase (PDH) [16,28-30]. This enzyme makes it possible to utilize glucose in the TCA cycle and produce energy. When this enzyme is lacking, it leads to the increased aerobic glycolysis, the formation of large amount of lactate, and finally to the acidosis of the extracellular fluid of tumor that stops the activity of the NK lymphocytes. The restoration of the proper activity of this enzyme by means of dichloroacetate (DCA) is described to result the apoptosis of the cancer cells [32,33].

Disturbed activity of the OXPHOS chain leads in some types of tumors to the leakage of the electrons from this chain. It causes the creation of reactive oxygen species (ROS) and leads to an increase in the oxidative stress in the cell [34]. The increased amount of energy is necessary to restore this pathological state but the production of the energy is disturbed. The cell degenerates gradually. If the mechanisms of the apoptosis do not kill the cell, it evolves into a cancer cell.

3.2. The role of trace elements and vitamins

Five trace elements are directly involved in the energy production in mitochondria, namely: manganese (Mn), magnesium (Mg), zinc (Zn), selenium (Se) and iron (Fe).

Manganese is an activator of three very important enzymes that occur only in mitochondria: pyruvate dehydrogenase (PDH), alfa-ketoglutarate dehydrogenase (KGDH) and mitochondrial dysmutase (SOD-Mn) [35-37]. PDH and KGDH are twilling enzymatic complexes immersed in the inner mitochondrial membrane that perform similar decarboxylation reactions; they are necessary for correct activity of the TCA and production of NADH for the OXPHOS chain. As it was mentioned, decreased activity of PDH is the common feature of many types of cancer. Decreased activity of KGDH can lead to the decreased concentration gradient alfa-ketoglutarate/succinate that initiates the production of Hypoxia Inducible Factor (HIF) in the cell. An increase of the HIF level is the initial regulatory stimulus for the change of the activity of many enzymes in the cell e.g. decreasing PDH functioning [31,38]. The high HIF level was found in some types of cancer and it seems to be an important element of the metabolic conversion in a cancer cell [24].

Mitochondrial dysmutase (SOD-Mn) is an important enzyme removing O2- ions that is the most important free radical being the effect of the leakage of electrons from the disturbed cytochrome chain. Its decreased activity appears to be an important factor increasing the oxidative stress and reducing the production of energy in mitochondria.

Magnesium and zinc are the most important co-factors for many enzymes. Each of them activates about 300 enzymes. Magnesium, like Mn, is an activator of PDH and KGDH [36,37,39]. It is also necessary for the glycolysis enzymes and proper activity of the immunological system. Zinc is a co-factor of e.g. cytoplasmatic dysmutase and it plays an important role in the process of cell division [39]. Zinc is postulated to be an important anti-tumor agent in the prostate cancer and other tumors [40].

Selenium is the trace element that is a co-factor of the glutathione peroxidase (GPO) [39]. It restores the oxidized glutathione G-S-S-G to the reduced form G-SH. Thus, it seems vital in the maintenance of the correct level of ROS and in the detoxification processes.

Ferrum is the co-factor of the catalase. This enzyme is the first barier against ROS. It decomposes H2O2 that arises in the amount of about 0.5kg/day/70kg human in the last step of the OXPHOS chain: translation of 2 electrons from the cytochrome C into O2. The decreased level of Fe and reduced activity of catalase can lead to the decreased energy production in the cells.

There are three vitamins that are involved in the ROS reduction: A, C and E. Vitamin E is mainly considered as care against the oxidation of the unsaturated fatty acids building the lipid membranes.
Vitamin C reduces the cytoplasmatic free radicals and supports the reduction of the oxidized vitamin E.

The increased ROS level leads to the uncoupling of the cytochrome chain in order to reduce further production of ROS. Thus, deficiency of each of these trace elements can lead to both decreased ROS reduction, increased ROS level, uncoupling of the OXPOX chain, and reduced energy production in the mitochondria, gradual degeneration of the cell and alternative conversion into the cancer cell.

The magnetic resonance spectroscopy has shown that the concentration of many ions inside the cancer cell is changed due to the initial lactate and H⁺ production. The concentration of Na⁺ and Ca²⁺ is higher and of Mg²⁺ is lower in the cancer cells. The concentration gradient across the membrane of all these ions is lower than in healthy cells due to lower energy production being necessary to shift the ions across the membrane. The negative electrical potential of the cell inside being equal in the normal state to about -90mV serves as an important factor pulling the positive ions into the cell. According to Nernst formula, this potential is able to create the concentration gradient of Me²⁺ ions equal to about 1000x. If this potential drops to e.g. -60mV due to the insufficient energy production, the concentration gradient of Me²⁺ ions decreases to 100x. One can conclude that the concentration of other ions such as: Mn²⁺, Se²⁺, Fe²⁺, Zn²⁺ may be lower inside cancer cells due to its lower membrane potential.

3.3. Glutamine and cachexy phase of the cancer
The other aspect of cancer is overuse of the glutamine in the cachectic phase of cancer. The strongly growing tumor utilizes big amount of glutamine to synthesize necessary biochemical compounds like DNA, amino acids and fatty acids. The low level of glutamine in patient’s blood stimulates the decay of the proteins in the muscles to restore the glutamine level that is necessary for the proper activity of intestine, kidneys, immunological system and the majority of other organs in the body. The lack of glutamine causes the collapse of metabolic equilibrium, finally it causes death. As it is presented in some experiments, the supplementation of glutamine during the chemotherapy and radiotherapy minimizes the side effects of the treatment, increases the concentration of some drugs inside the cancer cells, and decreases its concentration in healthy cells.

The intake of glutamine in the cachectic phase of cancer may stop the cachexy process and in this way elongate patient’s life to some extent. This effect can be more efficient if the intake of glutamine is separated in time with the intake of carbohydrates in the diet. The glutamine is mainly the source of NADPH₂ that cannot be directly converted to ATP and glucose is mainly the source of ATP and not of NADPH₂. The optimal condition for the growth of cancer is the simultaneously high level of both the ATP and NADPH₂. The separation of maximal concentrations of these metabolites in time should slow down the growth of the tumor.

3.4. Glutathione
The glutamine effect is partially caused by its modulation of glutathione equilibrium. Glutathione is the three amino acid peptide composed from the glutamate, glycine and cysteine.

The glutathione synthesis cycle shows that the substrate for glutamate is glutamine. An active place of glutathione molecule is the -SH residue being the part of the cysteine. Glutathione is an important molecule involved in redox equilibrium of the cell. It is able to remove free radicals that arise during the energy production. It is also the detoxification particle that takes part in removing toxins from the cell.

Glutathione is involved in a variety of metabolic functions like modulation of calcium homeostasis, activation of transcription factors, DNA repairing, cell cycle regulation, and regulation of enzyme activity. Most of these functions are related to its ability to maintain the reduced cellular environment. Malignant diseases are accompanied by reduction of glutathione in the organism, which can be to some degree reversed by the dietary glutamine intake. Other reports suggest that glutathione constituent amino acids, including glutamine, inhibit cancer promotion, at least in part, by their
influence on the glutathione metabolism. [61,62]

The other explanation for glutamine supplementation in cancers through the modification of glutathione metabolism was presented by Todorova et al. [58] They show that cancer cells possess higher concentration of reduced glutathione than healthy cells do, which attributes to higher cell proliferation rate and resistance to chemo- and radiotherapy. Therefore, selective tumor GSH reduction is a promising strategy in the treatment of cancer.

3.5. Immunological system

Cellular Defence System serves as a natural care against cancer cells; it consists of NK lymphocytes, macrophages, and neutrophiles that are able to kill the cancer cells [43,63]. The immunological system is a very important barrier against the growth of cancer and its role is underestimated in the current approach to the cancer treatment. The activity of NK cells is strongly lowered in the acidic milieu being a commonly described feature of many types of cancer. The NK cells are able to kill the cancer cells if pH is higher than about 7.0 and the pH of the extracellular fluid in the cancer tumours is equal as a rule to about 6.2-6.8 [31]. It can be concluded that the activity of NK lymphocytes is nearly completely reduced in cancer tumours and especially in tumours producing big amount of lactate in the absence of the activity of PDH.

The other important elements that are analyzed in the current paper and are necessary for the functioning of immunological system are: magnesium, glutamine and glutathione. Mg$^{2+}$ is an activator of many reactions participating in the immunological response and glutamine is the primary fuel for the increased metabolic activity of different immunological cells. Glutathione regulates the binding, internalization, degradation and T-cell proliferative activity of interleukine-2, thus may affect the growth of cytotoxic T-cells [64].

3.6. Candida albicans and other fungi

Not only is the Cellular Defence System a barrier against the cancer but it also serves as a barrier against the other pathogens, such as: fungi and parasites. It has been observed that the shape and structure of the fungus cells growing in the tight space becomes similar to the cancer cells. It may come from the similar cytoskeleton structure, energy production system and similar kind of growth of both cell types. The fungi are commonly existing pathogens which must be consistently removed from the organism. Generally, fungi produce different enzymes and toxins (antibiotics) that reduce the activity of immunological system and the absorption of the important trace elements in the intestine: Se, Mn, Zn and Fe [65]. Mycosis is also said to be in correlation with allergy [66]. Candida albicans are the most prevalent fungus that exists on the human’s mucous membranes. It is the saprophyte only until the mucous membrane is healthy, but after it breaks the mucous barrier it starts to penetrate the submucous area and it becomes the pathogen [66]. Produced toxins inhibit the defence system and acute response of the immunological system (heat, pain, oedema, red mark) is not observed during the gradual fungal infiltration of the organism.

4. Methods and results

The group of 102 cancer patients was investigated by using the MORA device RM10C + Ritu int. The patients were diagnosed to suffer from cancer by using recognized diagnostic methods. The patients possessed different cancer types and different stages of the illness. The age of the patients varied between 3 and 82 and the mean age was 55±16 years.

The MORA diagnostic test was performed to consist of about 100 different signals conducted through the patient’s body. The maximal resonating amplification of every signal was remembered for statistical analysis. The Figures present results for most often resonating signals correlating with known biochemical dysfunctions in cancer cells and in the total organism of the patient. The successive figures show the appearance frequencies of the maximal signal amplifications for which the resonance was observed. What seems most important is the proportion between all the colourful areas representing the resonance of the signal and the white area representing the lack of resonance. One
should remember that the maximal amplification of the observed resonance is the relative number that cannot be directly converted to any value being represented by SI unit. These amplifications seem to correlate with the intensities of the given processes but, until now, the precisions of these relations have not been analyzed. Approximately, the value $R=10$ denotes the weak resonance, $R=30$ - the medium and $R>50$ - high resonance. The results for the remaining tested signals that present the ratio of the patients with resonating signal to all patients are presented in Table 1.

4.1. Oxidative stress
The signal which represents the existence of oxidative stress is called ‘Degenerative tendencies’. The statistics is presented in Figure 2. It can be observed that more than 70% of patients suffered from the oxidative stress in the organism. The intensity of this process was high ($A>50$) by more than 20%. These results show that the oxidative stress occurs very frequently in the group of cancer patients.

4.2. Trace elements and vitamins
The results for the trace elements: Mn, Mg, Se, Zn, and vitamin E are presented in Figure 3. It is visible that manganese, selenium and vitamin E are most often resonating elements. The other ones were also found in the analyzed group.
4.3. Amino acids
The results for the amino acids are presented in Figure 4. It can be observed that both cysteine and glutathione involved in the cell redox balance and oxidative stress reduction resonated by more than 50% patients. Glutamine that is responsible mainly for the cachexy and indirectly for the oxidative stress reduction resonated in about 35% of patients.
Figure 4. The resonance of the amino acids: cysteine, glutamine and glutathione in the cancer patients group.

4.4. Immunological system and fungi

Figure 5 presents the ratios of the observed resonance of signals “Cellular defence system’ Candida albicans’ and ‘Mycosis’. It can be observed that the deficiency of immunological system and fungal infiltration are common processes occurring in many cancer patients. The coexistence of mycosis and cancer may be connected with insufficient activity of immunological system being a common barrier against both kinds of cells. Mycosis may be considered to be both the reason and effect of the deterioration of immunological system. On the basis of the results obtained, it can be hypothesized that the gradual fungal infiltration may be treated as a potential risk factor for cancer development due to the gradual deterioration of immunological system. The lack of significant symptoms of this infiltration is the reason for insufficient attention paid by the contemporary medicine to the coexistence of fungal infiltration and cancer.
Figure 5. Resonance of the Cellular defence system and mycosis. As the results suggest, the deterioration of cellular defence system and coexisting mycosis are important factors in cancer patients. Mycosis may be considered to be both the reason and effect of the deterioration of immunological system.

4.5. Other signals

Table 1 presents the summary of the frequency of the observed resonance $R \geq 10$ for other analyzed signals. These results are presented without additional comment due to the lack of the analysis of the references concerning the individual problems.

It seems important to stress most often observed resonance in the following groups of signals:
1. Many toxic substances (formaldehyde, putrafective and fermentative processes, heavy metals, lipophilic toxines).
2. The main allergens: wheat, milk and egg white, barley.
3. Many other micro-, macro-elements and vitamins, amino acids.
4. The important regulatory systems: intestinal defence system, lymphatic system, reticulo-endothelial system.

Table 1. The other important signals that have resonated in the group of cancer patients.

| Signal                                | percent of patients with resonating signal |
|---------------------------------------|-------------------------------------------|
| Intestinal defence system             | 60                                        |
| Wheat                                 | 53                                        |
| Lymphatic system                      | 53                                        |
| Egg white                             | 45                                        |
| Vitamin B6                            | 40                                        |
| Milk                                  | 39                                        |
| Folic acid                            | 39                                        |
| Putrafective processes                | 37                                        |
| Lead                                  | 37                                        |
| Formaldehyde                          | 37                                        |
| Barley                                | 36                                        |
| Reticulo-endothelial system           | 36                                        |
| Mesenchyme                            | 35                                        |
| Rye                                   | 34                                        |
| Acidosis                              | 33                                        |
| Chromium 3+ (trace element)           | 32                                        |
5. Summary
Assuming that analyzing the concentration of different substances inside the cell has been almost impossible in common medicine until now, the MORA diagnostics tool seems a very interesting alternative for the non-invasive estimation of the biochemical processes that take place in the human organism. Many biological aspects of the patient may be analyzed during relatively short time of the measurement giving the broad information about the patient’s condition and the initial and secondary causes of the illness. Also, the cost of the examination is low with respect to the amount of information about the patient’s condition.

Generally, the results obtained by means of this method correlate with the most recent knowledge that is available for the areas of cancer science, being analyzed in details in the current paper.

The method needs to be validated with respect to its sensitivity and accuracy. Moreover, biophysical fundamentals of the spectrum-specific energy absorption of ultra-weak signals must be explained in details.

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