PERSPECTIVE IN PLANT DRUG RESEARCH

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ABSTRACT: Plant medicine becomes more popular thought the world in these days probably of its latest toxicity. Ayurveda that leads in plant medicine preserves the natural form of herbs maximum, in various pharmaceutical preparations. Isolation of active principles has not proved much fruitful. However, the need of hour is cultivation of more medicinal plants along with popularization of their use traditional simpler forms.

INTRODUCTION.

Plant medicine appears to be most safe because of its proximity to the nature. Now there is occurring a growing trend of acceptance of plant medicine world-wide because synthetic or chemical drugs are proving toxic or idiosyncratic on both the short or long term use. Ayurveda leads in use of plant drugs.

Developing or changing socio-economic-cultural structure of humanity is causing a great hazard to plant drug community. Drug are decreasing ability, deterioration in quality, lack of identification, adulteration, decreasing populatory, half heart commercialization of Ayurvedic Pharmacy system etc.

Plant Drug Research.

Surprisingly, we have not so far decided our approach to plant drug research. There is a lack of definite understanding in this area. One has to decide whether we have to promote the isolation and use of active principles of plant drugs or to encourage the use of whole plant such as or both. Probably research scientists of 20th century have used their talent and research capabilities on the isolation of active principles but have yielded hardly few drugs of plant origin like reserpine. How over, this failure has not affected the use of plant drugs in Ayurvedic physicians are using the plants with the same enthusiasm and probably with the same success.

Recently many clinical trials have confirmed the efficiency of plant drugs in their crude form on scientific background. Few such examples include powder of many herbs like powder of Satavari8 (Asparagus racemosus) root and Amalaki15 (Emblica officinale) fruit in peptic ulcer disease, paste of whole plant of Kalmegha4 (Andrographis paniculata) infective hepatitis, stem bark powder of Kutaja (Holarrhena antidysenterica) in intestinal amoebiasis, seed powder of jambu (Eugenia Jambolana) and decoction of root of Arani (clerodendron phlomidis) in non-insulin dependent diabetes mellitus, stem bark of Arjuna (Terminalia arjuna) in heart diseases, Asvagandha (Withania somnifera) powder
In anxiety neurosis etc. Therefore, the approach to plant drug research should promote the use of whole plant as such.

The Perspectives

There should be a change in trend of research done by Ayurvedic scholars. They should render their research potentialities to clinical trials. Both the patterns of clinical research e.g. Ayurvedic diagnosis and Ayurvedic treatment as recommended by udupa committee, 1958 can be adopted according to suitability with the research model. More importantly, the results of clinical trials should be communicated to practitioners, scientists and also the general mass through suitable media. It warrants the publications of clinical trials in scientific as well as popular journals in different languages having an appropriate level of understanding Ayurvedic research workers should not unduly involved in chemical, experimental or pharmacological studies of medicinal plants. These studies should be done with the aim to develop modern new drugs of plant origin by scientists not by Ayurvedic Physicians need not be lead in developing new drugs from plant sources. They should do more and more clinical trials and should popularize their findings to scientists, practitioners as well as population at large through mass media.

Chemists and scientists may be needed more importantly to help in identifying the toxic constituents, if any, in plant drugs. They may be further helpful in finding a way to eliminate the toxic element. One leading branch of Ayurvedic medicine is rasa sastra which primarily deals with elimination of toxic constituents of various plants and minerals, commonly used in Ayurveda. This process is termed as ‘Sodhana karma’. Rasa-sastra for example have methods to eliminate the toxicity of plants such as Kupilu (Strychnous nuxvomica), Dhatura (datura stromonium), Vatsananbha (Aconitum ferox) etc. therefore a collaborative study of Rasa-Sastra scholars and chemists may be fruitful since they can find a way to identify as well as eliminate the toxic and unwanted constituents so that the whole plant may be used as such with greater safety and without isolation of active principles. It will also be necessary to identify the parts of medicinal value of each of these plants, and the seasonal variation and age of the plant in the content of their priate chemical and pharmacological studies. For example alkaloid content is found maximum in kutaja (Holarrhena antidysentrica) at the age of 8 nt0 12 years and just after rains from July to September.

Besides plants may be more used in favor of advance of organic chemistry but gain on the discretion of chemists. Chemistry departments abroad for instance in University of Brono, Czechoslovakia have big plant garden with a perspective to do research in plant chemistry dot necessarily to promote pharmaceutical research.

Adherence to conventional Pharmaceutical Procedures

Natural use of plants should be popularized. This can be met through Ayurveda by encouraging the use of plant drugs in five basic dosage forms collectively termed Panca Vidha kasaya KalpanaI namely Swaras (juice) Kalka (Paste or Powder), Srta (decoction), Sita( cold perfusion) and Phanta(hot perfusion). This will be in pursuance of primary health care as the methods are practicable, technology is universally accessible to individuals and families in the community through full participation and, moreover the community and country can afford the cost maintaining it at every stage of their development in the
spirit of self-reliance and self-determination. Industrialization of traditional pharmacy system has increased the cost of medical care several times. Even the cost of Ayurvedic drugs produced by private sector industries is mainly times higher than those produced by public sector pharmacies. The aforementioned panca vidha Kasaya Kalpanas will be home remedy, cheap and probably more effective. It will reduce the element of industrialization. This will be more importantly in pursuance of Alma-Ata Declaration – “Health for all by 2000 A.D.,

Cultivation of Plant Drugs

It is not amazing that plants are the major source of raw materials for preparation of drugs used in Traditional systems of medicine throughout the world including the Ayurveda. In earlier days such plants used to be easily available locally for medicinal use and such no need was felt to cultivate them. And, hence, no element of commercialization and marketing was needed. In recent years with the changing ecology, there has been a rapid depletion of such plants on the face of a growing demand due to coming up industrialization in the field of Ayurvedic drugs to meet the increased drug requirement of the growing population. Now, therefore, it is felt at all levels that the medicinal plants should be cultivated at large scale. This will help not only making the raw drugs easily available but will also provide an opportunity of improving the quality of raw materials.

At present there is a need of exposure of plants of medicinal value at public level. This can be achieved with the involvement of primary health centre. Each primary health centre should have a plant garden particularly for demonstration purposes. Simultaneously, use of such plants as medicine should be explained to the persons of that area along with the method of preparation of adopting Panca vidha kasaya Kalpanas. Thus, plant medicine will be within the reach of poorer sections of society.

Approach to Cultivation of Medicinal Plants

As regards the cultivation of medicinal plants, it should be done in three phases. In I phase ‘priority program’ has to be evaluated e.g. to find out the plants which have strong demand in the market and/or have strong demonstrable clinical effect of early onset that can make an impact on its producer or user. Alternative list of 50 essential plant drugs for primary health care has been reported earlier. Further a committee can be formed with the view to know the plant drugs of strong demand. Simultaneously, requirement assessment of individual drug should be evaluated which will be again helpful in ‘priority program’.

In II phase a wide ecological survey of medicinal plants should be launched to study the habitat of these plants in order to select proper cultivating sites and seasons and certain other details to each plant. Package of practice related to each plant drug should be collected – (i) from literature, (ii) by interweaving the local persons where the drug naturally occur in abundance or (iii) it may have to be developed by trial and error methods. In beginning, few villages should be selected e.g. ‘clusters’ for the cultivation of plant drugs. Procurement of seeds is a further problem which can be handled with the help of local persons. Later on, newer techniques for plant breeding, plant culture and genetic engineering should be applied to develop medicinal plants havening the greater yield of active components. Such a program could easily be launched in
collaboration with plant scientists and agricultural sciences.

Promotion and consumption of plant should be dealt in III phase just parallel to II phase. The phenomenon of co-operative cultivation of medicinal plants. This cultivation should be on the pattern of each crops to create an incentive in the cultivator, and National Drug Authority of India (NDA) should take lead in this area. A suitable market should be created for the consumption of plant drugs so that the cultivator can get the cost of his labour and necessary incentive and encouragement. It warrants the creation of a strong price control system. Easily available freely or without proper cost to consumers or drug manufactures. Unavailability of plants of natural abundance will be the final outcome, if, price control system is not adopted strictly. Meanwhile, contract system like that of leaves used in Bidi manufacturing should be followed to initiate the interest of cultivation of medicinal plants in farmers. Consumption can be further increased if contract is made with drug manufactures either directs through cultivators and consumers with the aid of radio, television, video, journals or periodicals.

Thus with the changing values and development in the use of plant drugs, there is a strong need of rethinking on the polices and perspectives in the area of research and exploitation of plants of medicinal use. The experiences of last few decades have also emphasized the need of review of approaches. Plants being the natural source of medicaments established for their values since antiquity need not to be put to undue examination in the name of research. It is more important to popularize their existing use and to work for their easy and persistent availability. However, the scientists of sister disciplines may use plants as a source of developing newer chemicals and drugs, if they find it feasible and useful. In view of the facts discussed above it is always advisable to draw out Ayurveda from extreme traditionalism and over claims. And, at the same time, it should be protected from too much science and scientific jugglery. Enough scope should be provided to the art of medicine to emerge.

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