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Review Article

Trend on traditional system of medicine and modern Ethnopharmacology - Perspective view

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ABSTRACT

The concepts of modern science and traditional knowledge often conflict in many ways, especially in the field of medicine. Though the traditional system of medicine has been followed from thousands of years back, still it is unable to achieve many expectations of modern medicine standards. At present, the researchers are being accelerated intensively on herbs because many herbs have been descended to modern pills with lead compounds like, Aspirin, Atropine, Ephedrine, Digoxin, Morphine, Quinine, etc. Thus, the different opinions have been established for traditional herbal medicines by the current trend. As the basic principles of these two systems differ from raw material selection to the treatment processes, fitting standard norms of one to another always remain difficult. This paper elaborately discusses the problems associated with the traditional herbal medicines to achieve the standards equivalent to the modern medicine. Due to this fact, the commercial value of the tradition system of medicine and its knowledge may disappear from the global market in the absence of sufficient measures. Hence, there is a need for the understanding the everlasting foundational logics of the traditional system of medicine and must be completely decoded by the modern science, or else it is suggested for a separate regulatory organization for traditional system of medicine, which can exclusively look after the quality and standards adapted from traditionally acquired knowledge and system of medicine developed by our ancient scientists.

Keywords: Ethnopharmacology; Herbal medicines; Modern science; Traditional medicine

INTRODUCTION

Traditional system of medicine (TSM) is highly secretive, mystical and extremely localized, practiced with knowledge passed on orally from thousands of years of experiences and is based on salient physical symptoms or perceived supernatural forces. At global level, traditional system of medicine eludes precise definition or description, containing some conflicting characteristic properties and viewpoints (Takaku 2002).

The great tragedy of science is the slaying of a beautiful hypothesis by an ugly fact (Jurg 2009). Generally, the ethno-pharmacologists use the working hypotheses derived from anthropological field work (Etkin and Elisabetsky 2005). TSM is a basic necessity adapted by the people from all corners of the world. The methods of treatment were almost uniformly followed through the herbal resources, and preparation methodologies differs from place to place. It is essential to preserve the scientific evidence to develop the cultural heritage as well as to prove the rationale of

using these formulations (Pulok 2006).

The tarns- cultural civilization is considered to be an important factor in the development of TSM. For example, Albanians Italy cults (Pieroni and Quave 2005), Turkish German cults (Pieroni et al., 2005), Afro-Brazilian cults (De Albuquerque et al., 2007), Colombian London cults (Melissa Ceutericka 2008) etc. There is evidence to support that wide-spread use of the TSM was initiated by the trespassers (Scott and Hewett 2008) as well as by the immigrant professionals upholding the system prevalent among natives (Pearn and Winkel 2006). TSM is having unique mode of therapeutic aspect suggesting the drugs alone is inadequate for treatment of diseases, but the patients have to change his lifestyle for complete relief. Apart from this there should be religious and spiritual beliefs that enforce quick recovery for normal health (De Albuquerque et al., 2007).

The ancient people were having ample knowledge to use the herbal materials for different ailments, though there are millions of natural materials available on the earth. Based on their knowledge, modern science has identified some of the therapeutically valuable ingredients and synthesized them as modern medicine. This initiation accelerated the discovery of lead compounds, but the modern science is reluctant to explore the

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knowledge behind the early man discovery which may give an idea for invention of new drugs.

Thus, keeping above facts, the present review is an attempt to motivate the modern science to explore the backbone concepts of TSM to improve the commercial value of the tradition system of medicine.

Current Scenario

In the TSM, those who collect the herbs are considered as “generator” because of having photo-therapeutic empirical knowledge, which is being passed by generation to generation. Further, the Information regarding the proper usage of plant by an ethnic group is extremely important. The method of collection and preparation procedure is very much essential for preparation of formulations as well as the therapeutic benefit. Earlier, the procedure for preparing the drug formulation used by the ethnic groups was accepted as well as transmitted by their offsprings but now these days young people have generally lost their interest in gathering the knowledge from their elders due to the influence of modern media, which destroyed the transmission structure of traditional knowledge (De Albuquerque et al., 2007).

The uses of natural products are having magical-religious significance, which has been found prominent within each ethnic group. Obviously, this approach is against to the new industrialized western societies, in which drugs from natural resources are considered either an option for poorly educated or low-income people or simply as religious superstition of no pharmacological value (Rates 2001). The modern formal education system also does not allow youngsters to spend time with their elders who either isolated or promoted greater indifference towards traditional knowledge.

Allopathic medicines are based on western culture and therefore, practitioners emphasize its scientific approach whereas, in traditional medicine / complementary and alternative medicine (TM/CAM) therapies have been developed differently and very much influenced by the culture and historical conditions. Therefore, traditional medicine practitioners emphasize health rather than disease that too mainly focused on the overall condition of the patient rather than a particular disease (Takaku 2002). According to Srinivasan (2011), we must find a solution to adopt the methods for natural living, or at least we should use immunization procedure to boost the disease resistance rather than the use of antibiotics for infectious diseases. Similar methodologies for other diseases must be explored to promote the disease resistance which can memorize the body and increase the disease resistance that may be passed many generations in the future.

Now a day’s most of the scientific researches on herbs are being conducted with the narrow aim to claim the lead compounds or as a credit for researcher and not

to explore the complete details of TSM and its fact behind the therapeutic value. Researchers normally do not show much interest for such as complicated task, particularly for the herbal medicines which generally contain hundreds of herbs and thousands of ingredients in each. They themselves limit their work for the compact article in such a way to meet out the norms of the publishers. Similarly, the expert panels of modern science journals are also in the same thought. They expect some concepts to the level of current modern science and table of content suitable to their standard format. Hence, in current scenario research is being conducted to go ahead into unknown area rather than complete exploration of the past. Though there are some application industries taking effort in such a challenging task, they are dispassionate in publication. Alternatively, it can be expressed that the modern science researchers want to catch out the fish, but they are reluctant to step into the sea. Therefore, outcomes of their scientific works are not reflecting the real strength of TSM. Successors of these researchers take one more step back for stepping into the sea, but still they are willing to taste the benefits only.

The industrial revolution and the development of organic chemistry turned the preference of synthetic products for pharmacological treatment with the commercial viability. As these are in pure from their structural modifications to produce potentially more active, and safer drugs could be easily performed (Rates 2001). These drugs are being produced in the factory and there is no possibility for existing in the natural system. Hence, it is easy to protect them by patent rights. This monopoly right of manufacturing and marketing of synthesized drug generates huge profit to the company whereas, in the traditional system of medicines, the manufacturers suffer a lot to claim patent rights because the formulations and preparation methodologies are already available in the public domain.

The digitalized search engine used by the patent office is also responsible for discouraging the manufacturers of TSM to claim the patent rights by showing the evidence displayed by the electronic search though that information is merely a citation and has no adequate work to make them as medicine. This hurdle forces the pharmaceutical companies to look for the economically viable new lead compounds rather than manufacturing the existing formulations that retard the development of TSM. On other sides, modern medicine manufactures to try to push down competitors who produce TSM by their economic power. They project their lead compound as a best among the all that makes impact on the opinion of professionals and slowly passes to the society. It could be explained by an example; the household turmeric powder is being used in India from thousands of years back but companies attracting towards their product by their marketing tactics and re-

luctant to advise the society to use it in the natural form.

This system of medicine was suppressed by influencing the technological, economic domination, industrialization, and business strategies used by the invaders who finally lead to adopt the dictator's policies. Poor countries were unable to loud their voice to claim authenticity for their products, though these products were largely used by the people. For example, the TSM followed in the world top most populated countries like China and India are not still equally recognized as western modern medicines.

Need of a traditional system of Medicine

The modern system of medicine has the age of merely 200 years, within this short period of time hundreds of well-established medicines have become outdated. Therefore, it triggers the intention of chasing the transformations of diseases and causative agents like virus and bacteria in the transforming globe. Whereas, in the TSM, the time of procuring the minerals and herbs from the earth are synchronized with the transformation of earth hence, no out-dated drugs are known so far.

In plants, metabolomics are expected to be much more complex estimated over 200,000 molecules (Fiehn 2002) as well as the diversity of plant secondary metabolites evolved through the continuous interaction with challenging and predominantly hostile environments. The plant metabolites generally confer a specific bioactivity (Schauer and Fernie 2006) and depend on the environmental conditions. It is well known that plants which can survive in a particular environment have to accumulate their secondary metabolites to tackle the environmental impact. This process being updated regularly whenever there is a change in the global atmosphere. This up to gradation keeps the TSM as everlasting one.

The Indian subcontinent, with the history of one of the oldest civilizations, has many diverse flora and fauna due to variations in geographical landscaping. Ayurvedic, whose history goes back to 5000 B.C., is one of the ancient health care systems developed through daily life experiences with the mutual relationship between humanity and nature (Pulok 2006).

In the literatures of Indian systems of medicine, it is clearly explained the raw materials used for the preparation of medicines. They are generally come from herbs and minerals, some of these are highly toxic even it may cause toxicity during collection and handling. The process of safe collection, toxic nature of unprocessed raw materials, handling, testing at each step to maintain quality, efficacy and the effect of drugs obtained from a failed process are well established. For example, medicines prepared, from toxic heavy metals and ores having a high amount of mer-

cury, lead and arsenic are being practiced with all these knowledge.

The efficacy of TSM is not only the consequence of their pharmacology but also depends on varying combination of pharmacologically active matters. Neglecting either of this aspect will provide only partial effect and thereby an erroneous outcome. Moerman (2007) also emphasized that the preparation of mind set up holistically will tune the disease and cited an example that "I love you" or "I hate you" the word from a person may kill or save a life. Hence, it appears that all the traditional medicines are associated with spiritual power, which is poorly understood by modern science, but simultaneously, it does not deny the effect of emotions that can alter the metabolism and normal health. It is a fact, though there are some common languages for communication across the world, every corporate realized the effect when giving advertisement in their local language for effective marketing, this logic may be acceptable to TSM also.

Traditional versus modern medicine system

It is generally accepted that the modernization and industrialization are inevitable for the survival of any service industry, and it is also applicable to medical service. The scientists working with plant materials always remain interested in the isolation of pure chemicals. Out of hundreds of key ingredients, the screening of particular combination and ratio of metabolites remains complicated. The active metabolites isolated by the industrial processes often fail to prove their efficacy shows that the chemical finger printing markers alone are not sufficient and require some combination. Hence, it has already been concluded that the syntheses of compounds are unsuitable for all the medicinal plants (Chan 2005).

Review of herbal research emphasizes that there is an urgent need to form a bridge between modern science and ancient medicine system. The extraction of active ingredients and various extraction procedures are not being followed properly in accordance with basic concepts of chemistry. For example, if the traditional medicines intended for the use of oral intake prescribed by the ancient medicine system with water as media, then hydro extracts of the respective herb should be used for the analysis. The temperature and period of the extraction must be standardized. Applying high pressure for effective extraction should be done carefully because heating with the high pressure causes chemical transformation like dissociation of compounds. This standardization protocol varies herbs to herbs but now a day's most of the researches are being conducted with alcoholic, hydro-alcoholic, or industrial super critical extracts. These protocols follow the standard guidelines but same for all. Especially a scientist who looks for screening study are keen in advanced sciences like molecular mechanism but take this extraction matter very lightly. Another failure of tradi-

tional medicine is due to many modifications in the processes of drug preparation. During the preparation of a traditional medicine using standard modern laboratory set up, the standard procedures of a traditional medicine system are being ignored and modified according to the laboratory set up.

The presence of synergistic or side-effects neutralizing ingredient combinations in medicinal plants is an old concept, and this fact was well supported by the Hippocrates, Greek physician (460-377 B.C.), the father of modern medicine and was also documented by IbnSina (980-1037 A.D.) foremost Arab doctor and philosopher as well as a scientist (Gilani and Rahman 2005). Traditional system of medicine which is generally prepared from various poly-herbal and mineral combination may have different degrees of synergistic as well as antagonistic action, which results in different pharmacological activity for specified formulation. When a lead compound of the formulation is isolated and synthesized, the above balancing method fails to prove its activity. So the science related to this fact behind the herbal combinations must be studied with all traditional concepts rather than going with a single target. There are hundreds of plant based medicines found to have better antioxidant metabolites and trace elements that play a vital role in degenerative diseases though their specific mechanism that could not be established, but they are proven by scientific evaluations (Srinivasan and Steffi 2012).

Traditional medicine practices evolved at different cultures in different regions and have no parallel development of standards and methods — either national or international — for evaluating them. Evaluation of TM/CAM products is also problematic, this is especially true in herbal medicines, the effectiveness, and quality can be influenced by numerous factors. These in turns have slowed development of regulation and legislation for TM/CAM (Takaku 2002).

Current trend towards traditional medicines

WHO, defines traditional medicine as including diverse health practices, approaches, knowledge and beliefs incorporating plant, animal, mineral based medicines, spiritual therapies, manual techniques and exercises applied singularly or in combination to maintain well-being, as well as to treat, diagnose or prevent illness (Takaku 2002).

There are many botanical products with a long history of their medicinal use has already been reported (Bast et al., 2002) based on their geographical areas, identification, parts used, preparation process, formulation, dose, mode of administration, indications, remedy for overdose and toxicity as well as preservation. In India, these data are transcribed from the ancient literatures, and necessary materials are translated and are being used as authenticated reference materials (Ayurvedic formulary of India, Ayurvedic Pharmacopoeia of India, etc.) for the national standard. Moreover, use of this

information may avoid animal experiments in pre clinical testing and reduce the number of clinical trials in humans.

Waiver of toxicology studies for initial clinical trial on herbal medicine intended to be used as prescription drug suggested (Wu et al., 2008). According to the FDA, It is not necessary to conduct acute, single-dose toxicity studies in animals for herbal medicines being developed under IND, because sufficient previous human experiences are available and thus granted a waiver for toxicology studies before clinical trial.

CONCLUSION

At present, the traditional knowledge concerning home-made phyto-products are represented not only by the remnants of an orally transmitted folk heritage but also by the new forms of knowledge, sometimes coming from the popular phyto-therapeutical books, mass media as well as the result of people migration. In academia, we often do not consider the concepts behind TSM as we are unaware and educated by a modern system of medicine and thus modern scientists are unable to detect a false-negative outcome of the results. In the current scenario, this concept is being considered by different organizations as a result, FDA has accepted the waiver of preliminary toxicological studies for some of the TSM already in human use. Data availability is the first consideration before any knowledge or discovery hence; there is an urgent need to explore these resources effectively by using the advanced knowledge and latest techniques for database. When the complete knowledge behind the TSM is understood, it can be subjected to the modern standard norms based on the experimental evidence. In the mean while, it is necessary to protect the extinction of TSM from the global market so that the standard norms of a tradition system of medicine must be regulated separately.

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