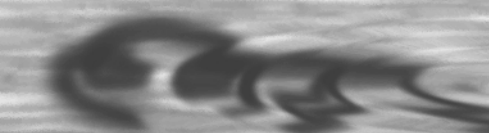

Standardization and evaluation of traditional medicine

JAYESH CHAUDHARY

VEDIC LIFESCIENCES
118 Morya House, Off Link Road
Andheri (W), Bombay 400053, India
Fax +91 22 5694 1179
Email: vedic@ayuherbal.com

ABSTRACT

Recent events in the Herbal Supplements industry particularly in the US, clearly point towards the urgent need for Herbal Standardization and Evaluation of Safety and Efficacy. Plant-based Traditional systems of medicine like TCM and Ayurveda boast of substantial usage data spanning centuries if not millennia indicating safety and efficacy. The opponents of Standardization and state Regulation for herbal products often cite this as the reason to block research based on modern lines. However, most understand why botanicals or Traditional Medicines need to be subjected to modern day scrutiny for product quality, safety and efficacy. This article details the justification, the approaches and the government effort needed for herbal product standardization.

PRESENT DAY JUSTIFICATION FOR HERBAL STANDARDIZATION

Modifications / Corruptions of the Original System of Medicine

Substantial original documentation for the more organized systems of medicine still exists. Large expanses of local ethnic medicine, folklore, etc. were passed on to the present generation only by word of mouth. Regardless of the size of following, the teaching or transmission of knowledge was always very personalized in small groups and often to a single student. Medical practice itself was very personalized suited to the patient's disease condition. Although the ancient medical texts like the "Charak Samhita" of India had laid down thousands of years back specific herbal formulas, the physicians down the ages took liberty to modify these formulas according to prevailing local conditions and with a view to serving the needs of individual patients. In course of time, though the name remained unchanged, the formula of the original preparation went through successive changes. This resulted in the same preparation having different compositions as well as different therapeutic indications. Thus any Traditional System of Medicine (*TSM*) is often crowded with duplication, confusing nomenclature of plants, accidental substitution of herbs, etc. due to these "transmission errors". There is no denying that the *TSM* that has been passed on to us from earlier generations is vastly different from the original works of the earliest authors. Even in the original works, the means of maintaining finished product quality, safety and efficacy mentioned were at best only subjective in the absence of objective means of evaluation available to modern day science. This only contributed to misinterpretations and distortions.

Socio-Economic Changes in Herbal Practice

Modern day awareness of the needs for Herbal Standardization and Evaluation have been aptly summarized in the words of the present Drugs Controller of India, Mr. Ashwini Kumar: "*In earlier days, the activity of herb procurement, preparation and dispensing remained mainly the responsibility of practitioners and was on a one to one relationship between physician and his patients. It was a matter of sacred trust. However, the socio-economic changes in modern times, the technological advances, commercial factors, consumer preferences, changing lifestyles, etc. has influenced the way Herbal drugs are being 'manufactured' and distributed in the country. The Practitioner as well as the Consumer now seek assurance from the manufacturer about quality, safety and efficacy of a readymade Herbal Supplement or Medication*"

Changes in Physical Constitution, Social Habits and Environmental Stressors

It may not be incorrect to assume that in earlier days with the pollution-free environment and close-to-nature lifestyle, the average adult was healthier than the present day citizen. There has been a remarkable change in the average adult's physical constitution and his natural immunity towards the disease state, the nature

and severity of diseases and the dietary and social conditions within which the patient may be consuming the Supplement. The human race has been exposed to newer disease agents like HIV in the last century than ever before. It is possible that the same diseases existed in earlier times but were diagnosed differently. The disease causing agents / factors then and now are also dramatically different. An average person's diet, lifestyle and other social habits, all which play important roles in disease and treatment, are completely different today. Hence the earlier recommendations for herbs for specific disease states may not hold true today unless validated in today's times.

Phenotypic Changes in Plant Species

Plant constituents are greatly influenced due to climatic factors, intra-species variations and geographical location of their collection and cultivation. The herbs and their properties as described thousands of years ago without doubt must have undergone changes in phytochemical profile in the normal evolutionary process and due to changed environmental and agronomic conditions. Hence the original pharmacological claims of these medicinal plant species need to be revalidated.

Substitution of Drugs Due to Non-Availability or Scarcity

Some traditional literature allows the substitution of herbs that were not found easily or scarce in certain regions. In some cases the substitutes have acquired the status of the original herb and are sometimes wrongly attributed with all the properties of the original herb. With passage of time, the herbs that were meant to substitute the original herb in one application start finding use in other applications not recommended by the authors. Due to substitution, the efficacy of the formulation is also subject to change. Hence constant clinical evaluation and validation is a must. Shortage of authentic plant material has made it incumbent that some sort of uniformity in the Supplement manufacturing should be brought about.

Evaluation of Herbals as Supplements / Concomitant Therapy

In several countries, regulatory authorities have still limited the use of herbals as supplements and not as the first line of treatment. The high cost of regulatory approvals required placing a botanical drug on the market as the main line of therapy has meant that herbals are often taken "Supplements" to other allopathic treatment. The possibility of incompatibilities and complications cannot be ruled out. Research on the safety and efficacy of most common herb-drug combinations prevalent is called for.

Proliferation of Proprietary Formulas over Traditional Generic Formulas

Traditional literature in Ayurveda for example mentions specific herbal cocktails for all disease conditions. Single herbs are considered inadequate for most conditions. Hence the Indian Market for Herbal products is largely made up of these Traditional "Generic" Formulas as mentioned in the texts eg. "Chyavanprash". However, recently the market for branded proprietary products is fast outgrowing that of the traditional preparations. The efficacy and safety of traditional formulas has been confirmed by informal system of trials down the ages but the branded preparations are not prepared as per Ayurvedic texts hence their final efficacy is open to question. Thus the need to confirm their efficacy.

Tough Dietary and Lifestyle Restrictions for Effective Therapy

Ayurveda, particularly among TSM, strongly recommends other lifestyle changes in conjunction with herbal medication. Several guidelines in Ayurvedic treatment are either difficult to adhere to in present 21st century lifestyle or are not taken seriously by the consumer. The importance of label instructions (eg. "Take with warm milk" or "mix with honey", etc.), dietary restrictions, dosages, etc. need to be studied using modern techniques. Such research can go a long way in improving patient compliance and achieving better results to herbal therapies.

Change in the Consumption Pattern of Traditional products

The original recommendations for usage of Herbs and herbal products have undergone mutations in areas of age groups, races, etc. Ginseng is a popular traditional product originating from a certain geographical region where it has been immensely successful on local yellow populations. However, Ginseng has clearly a larger market outside of Korea and it is consumed by millions people of White / Hispanic / African racial backgrounds. The Traditional Ayurvedic preparation "Chyavanprash" was originally recommended only to old age people to increase longevity but now even children commonly consume it. If efficacy of traditional products can be established with multi-centric trials across different ethnic populations, the original recommendations will stay valid across age, sex, race, climates, etc. spanning the entire spectrum of possible human usage.

Over-Exploitation of Consumer Sentiment on Herbals

In the last half-century, Natural Ingredients have entered several hitherto untouched areas of our lives. There is now a Herbal variant of all Fast Moving Consumer Goods: foods, cosmetics, personal care products, pet care, household products, etc. on the store shelves. Several herbal variants are either unjustified or have exaggerated claims. Finished product quality control through regulatory legislation is the answer to the problem of spurious and sub-standard "herbal" products with some times exaggerated claims.

Modernization of Herb Form Being Administered

Several TSM employ the herb in decoction or extract or tincture form but the majority of medication was still in whole herb form. However, today's herbal products, guided by the pharmaceutical practices of over-purification are sometimes presented in the form of near pure phytochemicals or concentrated extracts which bear little resemblance to the original herb in chemistry, efficacy and even safety. Due to the emphasis on higher and higher actives, the other actives in the plant are often excluded to a point where efficacy suffers and toxicity approaches that of synthetic compounds. Such preparations should be not only tested to confirm efficacy but also long term safety in humans.

In Self-Interest of the Natural Products Industry

Self-regulation or Governmental control is in the self-interest of the Industry. If the consumer continues to get disillusioned with Herbal products quality due to a few unscrupulous players, then the present rising interest in Natural products will ebb and the entire Industry will be at the losing end.

APPROACHES TO HERBAL STANDARDIZATION

Standardization of Herbal Ingredients and the Finished Preparations would be considered two distinct areas of Herbal Research. Research involving basic issues of herb standards clearly needs to be taken up in the public sector and academia whereas standardization of branded products of course remains the responsibility of the brand-owners.

Pharmacognostic & Phytochemical Profiling of Herbs

Complete Monograph preparation of commonly used herbs from across the globe. Comparative studies with common substitutes and adulterants. In this area, various countries in publishing their Herbal Pharmacopoeias have made some progress. However, standardization of herbs and compound preparations will come a long way if a concerted effort is made for isolation of biologically active compounds for use as HPLC and HPTLC markers and maintaining a cost-effective supply source for academic and private researchers to draw on.

Pharmacological (Animal) Screening

The pharmacological screening of plant material from all parts of the world has been in progress for a good part of the last century and may continue for a large part of the present century also. Private and public agencies have been looking for established and novel activities in popular as well as rare flora and fauna.

Clinical Evaluation

Taking potentially active candidates to the clinic in phase I and II trials to evaluate novel activities can be the concluding effort in herbal standardization that would lead to a healthy and growing market for herbs. Comparative studies using pharmaceutical drugs of choice as the comparator can produce the clinching evidence that most regulatory agencies and allopaths would not afford to ignore.

Dose Determination and Safety Studies

For even the established uses of common herbs, due to changes over years in patient population, environmental conditions, disease patterns, plant phenotypes, etc. a fresh evaluation of therapeutic and toxic doses should be carried out.

Development of Analytical Protocols for Finished Products

Even as Phytochemical Science and Industry has made some progress on analytical methods for the raw materials, the finished product quality control is still a challenge. Industry has now long used the excuse that Multi-Ingredient Product quality control is a costly process and sometimes unattainable. (Which is alas true sometimes!). Hence if some simple and cheap universal methods can be devised in the public domain for common poly-herbal combinations then there may be more incentive for manufacturers to test their finished product.

Privately funded clinical evaluation of branded formulations has been happening in the past and is only likely to grow.

PUBLIC EFFORT NEEDED

Government Funding and Support

The Pharmacopoeias often form the basis of quality control in the drug industry of any country. Several countries have already made progress in the compilation of their national Herbal Pharmacopoeias such as the American Herbal Pharmacopoeia, German Monograph E and Indian Herbal Pharmacopoeia. However, this exercise needs to be continued further with added vigor and speed because a more comprehensive Pharmacopoeia covering larger number of herbal ingredients in greater detail can then pave way for Standardization of Herbal products by industry.

Drug Testing Labs

In a fragmented market like most Herbal markets are today, it is impossible to expect the smaller players to have in-house facilities for testing and product development. Third party testing facilities, contract research laboratories and other ancillary / facilitating agencies should be encouraged to meet the needs of the small-scale sector. Easy finance, speedy clearances, accreditation, etc. for agencies trying to enter this field should be provided.

Health Regulatory Policy

Without a stringently written and implemented regulatory policy on Herbal quality control, there will never be adequate motive for private initiative in this field. Governments should of course first create the public and private infrastructure needed to fulfill the requirements then religiously implement the existing provisions of health regulations or amend the existing laws to give health authorities more teeth. Private investment in this area will then automatically follow.

Consumer Awareness Program

Having the infrastructure and Health Administration in place, a consumer awareness program be launched. This will ensure that private companies tighten up and deliver quality at affordable prices. It is only after the poor standards in a particular product segment are exposed, does that sector wake up to quality consciousness.

International Promotion Program

After having done the good work, the industry and particularly the government can and should tell the whole world about the modern quality standards that their "traditional" medicine adhere to. The Korean government has done wonders with the public knowledge they have generated for marketing of their national product ginseng.

CONCLUSION

Herbal Standardization is a much-needed public and private effort that will help in elevating Traditional Medicine to the levels it probably deserves internationally.