

Ayurvedic Herbs and Nutraceuticals: Can Ayurceuticals be the New Genre?

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Upanishads, the ancient database of knowledge in the Indian subcontinent, says that food is the source of life. It further adds that not only life, but also nourishment of mind depends on nutrition. Ayurveda, the Science of Life, proposes that some food articles like ghee and buttermilk act as medicine while others, with the addition of medicinal herbs, play a role of 'medicated foods'.

A simple example of traditional medicated food is moong-dal-rice (khichadi) cooked with addition of trikatu (a mixture of dry ginger, black pep-per and piper longum) powder and rock salt in specific proportions. It is administered in fever of any type as a nutritional support instead of the normal diet of the per-son. Similarly, water boiled with cinnamon, coriander and carom seeds is consumed when a person feels 'unwell' or experiences some digestive disturbance.

In the last couple of decades these traditional practices have been lost due to a transition of the age-old dietary habits to a more 'sophisticated', fashionable diet in urban India, a trend that is percolating to town and cities. Ready to eat pre-cooked food, which was originally made especially for soldiers and support staff staying in very adverse climatic conditions, is now popularized and available in villages. On one hand, the green revolution has success- fully reduced hunger deaths and the problem of malnutrition is slowly coming under control; on the other, the burden of lifestyle disorders or Non-Communicable Dis-eases (NCD) such as obesity, diabetes, cancer, Alzheimer's disease etc. is on the rise in the Indian population as well as across the globe.

Causes of NCDs reveal two things associated with diet. Agriculture scientists propose that though the society is consuming a sufficient quantity of food, one does not get the desired nutrition due to depletion of nutrients in cereals, legumes and other plant foods. Modern nutritionists point out that consistent consumption of preserved foods, including biscuits that use salt, sugar, trans fats and other preservatives, affects the human biological system in a negative way.

Scientists have realized that this problem cannot be tackled just by prescribing digestion corrective medicines or supplements

like iron, calcium or other minerals at therapeutic doses once in a year or two. In the search for solutions to these two aspects and prevention of metabolic or lifestyle diseases, modern western scientists have introduced two new categories that create a bridge between medicines and food, that is, nutraceuticals and functional foods.

Scientifically, there is a difference between food supplements, nutraceuticals and functional foods. Food supplements are concentrated nutrients like iron and calcium, which are normally available in food and are prescribed upon depletion of those in the body in a disease condition for a specific duration. Nutraceuticals may not be part of daily diet but are added to daily diet for a longer period of time, for example, probiotics. They have partly nutritional and partly pharmaceutical characteristics and hence possess demonstrable benefits in management of chronic diseases. Functional foods are similar to conventional food in appearance but have measurable physiological benefits, like eggs enriched with omega-3 fatty acid. A new category of phytopharmaceuticals has been approved recently where a pharmaceutical product is prepared from herbs by adopting scientific drug development process with confirmed safety and efficacy.

In a nutshell, nutraceuticals and functional foods consist of dietary supplements, energy drinks and bars, sport drinks, smoothies etc. These products have natural, bio-active compounds having health promoting, disease pre-venting effects. They provide us with proximate principles as well as vitamins, minerals, trace elements, pre-hormones and other phytochemicals that have health benefits. Numerous studies listed on PubMed and Medline have demonstrated palliative, preventive and modulatory role of nutraceuticals and functional foods in improving and maintaining a healthy population.

Herbs as Nutraceuticals

The revelation that the typical Indian everyday diet consists of many types of gourd and leafy vegetables, spices, herbs, legumes and seeds that are rich in phytonutrients, carotenoids, phenols, polyphenols, alkaloids, flavonoids, which impart favorable health related outcomes singularly or in synergistic combinations, has led scientists to a reverse phenomenon. Modern scientists have now developed a keen interest in traditional systems of medicine (Ayurved).

Some plants like emblica, ginger, garlic, curcuma, cum-in, and Indian basil form an important constituent of the traditional diet, and research has demonstrated evidence of their antioxidant, immunomodulatory, memory enhancing, anabolic and revitalizing effects. They have been linked to reduction in severity of many diseases, including cancer, heart diseases, urogenital conditions, gastrointestinal maladies, stroke and many more.

Evidences of the aforementioned benefits have led to the development and promotion of the concept of nutraceuticals, dietary supplements and functional foods to fulfill the daily dietary needs of a person to maintain health. The question is whether using some plants or their isolates as nutraceuticals is appropriate and sufficient, or do Ayurvedic science and Ayurvedic herbs have something more to offer?

Nutraceuticals according to Prakriti (Constitution)

Prakriti (constitution) is unique to every individual, and it varies in every individual. The food that one consumes has to be in accordance with one's prakriti to remain healthy. Studies on causes of a majority of NCDs show a high correlation between wrong dietary choices of patients, probably due to a basic disregard to the concept of prakriti.

Nutrigenomics explores molecular level interactions between nutrients and other bioactive dietary molecules with the genome and the functional sequences in gene expression. The concept of individualised approach through nutrigenomics goes very well with the Ayurvedic concept of dietary specifications according to individual's prakriti, season of the year and time of the day.

Neem capsules as a nutraceutical taken by a Vata-Pitta predominant person will induce a drying effect on the gut of the person and instead of benefits he would suffer from constipation that leads to variety of complaints. Similarly, curcuma supplement for a Pitta-predominant person may lead to various symptoms like burning of mucosal membrane, epistaxis or others upon long term usage. There is definitely a lot of scope to develop and design nutraceuticals based on broad categorization of prakriti.

Nutraceuticals in Pregnancy

The co-relation between maternal nutrition and foetal origin of diseases has been studied extensively with reference to diabetes and CVS. The foetal origin of adult diseases hypothesis has emerged as a potential research field.

Ayurveda has always emphasised the importance of impact of behaviour and eating habits of both the parents before

conception. Diet of the woman after conception is explicitly discussed with a justification that it not only nourishes the foetus but also has implications for the adult life of the individual.

It is known that appropriate folate supplementation in the pregnant woman has reduced the incidence of neural tube defects significantly. Obstetrics in Ayurveda has a unique set of plants which are to be taken sequentially every month, in a small dose daily till full term, for optimum development of all tissues of the foetus. Some of these are Glycerizaglabra, Rubiacordifolia and Asparagus racemosus, Hemidesmusindicus and Nelumbiumspeciosum, Solanum indicum, Solanum xanthocarpum, among others.

Selection of these particular plants for a particular month, out of approximately 700 plants listed in the repertoire of Ayurvedic Samhita, indicates experiential evidence. A few studies have been conducted to assess the effects of these herbs; however, a robust study can be designed to confirm the concept and label these herbs as nutraceuticals for healthy progeny.

Future Scope for Nutraceuticals and Ayurvedicals

One cannot turn back the wheel of evolution, but taking the wisdom of traditional practices into account, Ayurvedic herbs can be developed as nutraceuticals for the management of NCDs. Also, eggs enriched with Omega-3 fatty acids or curd enriched with lycopene can have more varieties by using carom (ajowan), or shunth (dry ginger), for the use of people suffering from Irritable Bowel Syndrome (IBS).

Broadly, such advanced nutritional products based on Ayurveda principles may be aimed at providing for

- i) Cellular health support,
- ii) Immune health support,
- iii) Bio-chemical/neuroendocrine support
- iv) Nutritional support, through phytonutrients.

Medicinal plants are generally known to possess the 'Single lead multiple target' phenomenon. They achieve this through their potential adaptogenic, immunomodulatory, metabolo-modulatory, anti-inflammatory and disease modifying properties.

In recent times, there has been a lot of focus on research on medicinal plants as well as herbs that form a part of our daily diet. There has been a large body of evidence that forms a basis for their use as nutraceuticals due to their capacity to bring about modulations in various bio-chemical processes that offer protective effects to various organs. More and more people are getting health conscious and are warming up to dietary supplements for their preventive or curative effects along with an excellent safety profile.

With better understanding of various metabolic processes and disease causation coupled with the convergence of traditional and modern health science and modern nutritional science, it is possible to develop new products. It will lead us to understand and formulate a conceptual basis for ayurvedicals of traditionally used products for better health outcomes that are aimed at providing basic nutrition and at the same time reducing disease risk.?