



Review Article

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Nutraceuticals and Rasayan Chikitsa- A Review

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ABSTRACT

Introduction: Today's sedentary, stressful lifestyle, urbanization etc. more affect the health of human beings worldwide resulting in increase lifestyle-related disorders. As health-related awareness increases in the population, people become more conscious about their future health. This makes to grow public interest towards nutraceuticals and *Rasayana* therapy which has ultimately resulted in increased life expectancy and thus contributing to rise in elder population. Ayurveda states that the prime objective of it to maintain health which can be achieved by practicing healthy food intake along with *Rasayana* therapy. The purpose of both nutraceuticals and *Rasayana* is same that is to achieve healthy life and prevention and treatment of disease. **Aims:** To find out the concept of Nutraceutical and its relation to *Rasayana*. **Materials & Method:** Ayurvedic textual materials were referred mainly with available commentaries of *Samhitas*, published books of nutraceuticals, pharmacology and internet sources. **Result & Discussion:** The review revealed that the concept that nutraceutical was prevailing during the *Samhita* period which aimed at maintenance of healthy life that can be explored in the principle of *Rasayana*.

Keywords: Ayurveda, Nutraceutical, *Rasayana*.

INTRODUCTION

The term nutraceutical is a hybrid of nutrition and pharmaceutical and was coined in 1989 by De Felice which laid the foundation for innovation in medicine [1]. It was defined as any substance that may be considered a food or part of a food and provides medical or health benefits, including the prevention and treatment of disease. Such products may range from isolated nutrients, dietary, supplements and diets to genetically modified foods, herbal products, and processed foods such as cereals, soups, and beverages. Health Canada states that nutraceuticals are a product that is prepared from foods, but sold in the form of pills or powders, or in other medicinal forms not usually associated with foods. A nutraceutical is demonstrated to have a physiological benefit or provide protection against chronic disease. Ayurveda has also stated the same principle as *Swasthurrjaskar Chikitsa* [2] that means the different ways by which one can achieve health by maintaining optimum tissues. Thus it can be stated that primarily *Rasayana* help to attain a healthy state and secondarily it can also be used for the treatment. Further, as per the statement *Rasaynam Cha Tat Gyeyam Tat Jara Vyadhi Nashnam* [3]. *Rasayana* is a unique therapeutic methodology to delay aging and to minimize the intensity of problems occurring in the degenerative phase of one's life. Prevention and management of health problems could help the elderly to improve quality of life and remain self-dependent for their daily activities to a maximum possible extent. These facts indicate that one objective of *Rasayana* is to achieve the best nutritional status is quite near to the concept of nutraceutical. Here is an effort to understand nutraceutical in light of *Rasayana* has been done.

Aims & Objectives:

To review nutraceuticals from modern science and effort to elaborate as *Rasayana* therapy Ayurvedic point of view.

MATERIAL AND METHODS

To fulfill the aims and objectives relevant Ayurveda and Modern literature, books of nutraceuticals, available information on the internet etc. were searched. The results on search are described hereafter.

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DISCUSSION

Quite similar to nutraceuticals which are known to have a physiological benefit or provide protection against chronic disease, *Rasayana* therapy is also known for the different ways by which *Uttam Dhātu* can be attained by providing appropriate nourishment. Though various classification and objectives of *Rasayana* have been mentioned *Kāmya Rasayana* which includes *Pranākāmya*, *Medhākāmya*, and *Srikāmya*^[4], in particular, are targeted for maintenance and promotion of health. Out of these, *Prana Kāmya Rasayan* is administered to promote the vitality and longevity of life and drugs in single or in combination for this purpose used are *Amalaki Rasayana*, *Triphala Rasayana*, *Chyavanprash Rasayana*, *Brahm Rasayana*. *Medhākāmya Rasayana* is administered to promote intellect, examples are *Shankhpushpi*, *mandookparni*, *Guduchi*, *Yashtimadhu*, *Ashwagandha*, *Vacha*, *Jyotishmati*. *Srikāmya Rasayana* is administered to promote luster such as *Amalaki Rasayan*. *Ayurveda* also stated about *Rasayan* that must be taken by everyone on a daily routine which is known as *Ajasrik Rasayan*, examples are *Ghrita* and milk. In addition about *Aachar Rasayana* has also mentioned that means to adopt good conduct which ultimately reduces stress and provide mental health. Along with *Rasayana Chikitsa*, *Vajikaran Chikitsa* is mentioned in very elaboration. In this various dietary regimen are prescribed which improves the nourishment of and function of the reproductive organs and vitalizes tissues of reproductive organs, which promote sexual health and results in healthy progeny examples are *Brihani Gutika*, *Vrishya Ksheera*, *Vrishya Yoga*.

Ayurveda pertains to the influence of environmental factors on the physiological factors. The external stressors in the form of environmental factors tend to have an impact on the three biological factors. To neutralize these impacts, some recommendations are made. A unique nutraceutical based on seasonal variations is '*Ritu Haritaki*' i.e. use of the fruit of Chebulic myrobalans (*Terminalia chebula*) as per the season. The fruit should be used along with rock salt (*Saindhava*) in the rainy season, with sugar in autumn, with dried rhizome of Ginger (*Zingiber officinale*) in early winters, with fruit powder of long pepper (*Piper longum*) in late winters, with honey in spring and with jaggery in the summer season. Moreover, *Bhallataka Rasayana* (preparation of fruits of *Semecarpus Anacardium*) should not be consumed in the summer season. *Ayurveda* also advocates the uses of *Rasayan* in relation *Aharkala* (meal timings), Use of ginger mixed with rock salt before meals are advocated to enhance the appetite and aid digestion. Another example is of *Triphala Rasayana* according to which fruit of *Chebulic* myrobalans are to be consumed after the digestion of the previous meal, of *Beleric* myrobalans (*Terminalia bellerica*) before taking food and of Indian Gooseberry (*Emblica Officinalis*) after taking the meal.

Ayurveda states that sound health depends on three biological forces named as *Vata*, *Pitta* and *Kapha*, which are all-pervading and in their state of equilibrium, are responsible for healthy structural and functional setup. Although different levels of their predominance are said to determine different types of physical disposition (called *Prakruti*), age-wise also, their levels tend to vary. In brief, while the predominant *Kapha* in childhood promotes growth and development by supporting the anabolic activities, *Pitta* in adults maintains a higher metabolic rate and ensures increased productivity/performance, whereas the increased *Vata* in old age leads to elevated catabolism, wear and tear leads to degenerative changes. For this precise reason, it is important to

take these factors into consideration while advocating any nutraceutical. For example, the paste of Indian Pennywort (*Bacopa monniera*) and Sweet flag (*Acorus calamus*) along with honey is given to the newborn to pacify the increased *Kapha Dosha* and to improve the memory of the child. All the *Rasayana* and *Vajikarana* formulations are advocated in the young age while *Chyavanprash* is a *Rasayana* for old age as well. Along with *Rasayan Ayurveda* also explained about qualities of *Ahar Kalpna* (different form of eatables, mainly prepared with rice) is *Peya*, *Vilepi*, *Mand*, *Yavagu Ayurveda* prescribed 28 *Aushdh Sidha Yyavagus* for the different diseased condition. *Ayurveda* also prescribed various food-based medicine like medicated milk, *Ghrita*, *Kharjuradi Tarpan*, *Kharjuradi Manth*, *Lajadi Tarpan*, *Aushadh Sidha Jal*.

Nutraceutical can be classified on the basis of the mechanism of action irrespective of source, based on proven physiological properties among the classes could be antioxidant, antibacterial, antihypertensive, anti-hypercholesterolemic, osteoprotective etc. It helps product developer to develop nutraceutical product, some nutraceutical ingredients or mixture are marketed on the basis of that they have been used for many years, another method of grouping nutraceutical is based on upon their chemical groups such as isoprenoid derivatives, phenolic substances, fatty acids, and structural lipids, amino-acid based substances, carbohydrate and derivatives, microbes and minerals. Isoprenoid Derivatives (Terpenoids) –Isoperinoids and terinoids are terms used to refer to the same class of molecules. These substances are one of the largest group of plant secondary group metabolites. Many popular nutraceutical families such as caretenoid, tocopherols, cotrienols, and saponins also referred to as isoprenoid derivatives because the principal building block molecule is isoprene. Most plant contains essential oils, which contain a mixture of volatile monoterpenes sesquiterpenes. Limonine is found in the essential oils of citrus peels, menthol is the chief monoterpene in peppermint essential oil an animal study proved anticarcinogenic activity of d-limonine in DMPA induced rat mammary carcinogenesis^[5]. Two potentially nutraceutical diterpenes contain a furan ring, the furan ring component might be very important in yielding some of the potential antineoplastic activity of these compounds^[6]. The carotenoids, whose name is derived from carrots are the most recognizable form of coloring pigment with the isopropenoid class. The epidemiological pieces of evidence proved that low intake of vegetables and fruits and carotenoids is consistently associated with a risk of lung cancer in both prospective and retrospective study^[7]. Phenolic substances like terpenoids, phenolic compound are also considered secondary metabolites. The base for this very diverse family of molecules is a phenol structure, which is a hydroxyl group on an aromatic ring. From this structure, larger and interesting molecules are formed such as anthocynins, couramins, phenylpropamides flavonoids, tannins, and lignin. Certain phenolic compounds, such as acanthocynins, catechins, preanthocynins, another Non-coloured flavenoid may regulate different signaling pathways involved in cell survival^[8]. It is believed that acanthocynin pigments and related bioflavonoids found in tart cherries and other red fruits scavenge free radicals, modulate cytokines, reduce DMN degradation, decrease permeability, inhibit cyclogenase, and strengthen biological membranes. Many of these biochemical reactions would be expected to reduce inflammation and edema^[9]. Simple couramins to their biological activities, they have shown to be useful as antitumor anti-HIV agents and as CNS- active compounds, furthermore, they have been reported to have multiple biological activities (anticoagulant, anti-inflammatory), in addition, they have antimicrobial and antioxidant activities^[10]. **Carbohydrate and**

Derivatives –The glucose derivative ascorbic acid (vitamin C) is one of the most recognizable nutraceutical substances and is a very popular supplement. Ascorbic acid functions as a nutraceutical compound, primarily as an antioxidant. Meanwhile, plants produce some oligosaccharides that appear to function as prebiotic substances. Beyond providing structural characteristics to plant tissue, another interesting role of certain fibers is in tissue repair after trauma, somewhat analogous to scar tissue in animals. Another family of important polysaccharides is glycosaminoglycans (GAGs). These compounds are found in animal connective tissue, they are potential components of functional foods. At present, GAG and chondroitin sulfate are popular nutrition supplements being used by individuals recovering from joint injuries and suffering joint inflammatory disorders. Glycosaminoglycans are often referred to as mucopolysaccharides. They are characterized by their content of amino sugars and uronic acids, which occur in combination with proteins in secretions and structures^[11]. **Fat-based** –In 1994, the Committee on Medical Aspects of Food Policy (COMA) published a report bringing together evidence on various nutritional determinants of heart disease (Department Of Health,1994) one aspect was the beneficial impact of fish oils and their constituent long-chain omega-3 Polyunsaturated fatty acids, on platelet aggregation and tendency towards thrombosis. The daily recommendation emerging from this particular discussion, i.e. 0.2 g long-chain n-3 PUFA, extensive evidence has been published on health benefits of fish oil and their constituent fatty acids; Docosahexaenoic acid (DHA) and Eicosapentaenoic acid (EPA), along with this its role in brain development and function is also proven^[12]. **Amino Acid-based**- This group has the potential to include intact protein (i.e.,soya protein), polypeptides, amino acids, and nitrogenous and sulfur amino acid derivatives. Today a few amino acids are also being investigated for their nutraceutical potential. Among these amino acids are arginine, ornithine, taurine, and aspartic acid. Arginine has been speculated to be cardio protective in that it is a precursor molecule for the vasodilating substance nitric oxide (NO). Also, arginine may reduce atherogenesis. Meanwhile, the nonprotein amino acid taurine may also have blood pressure-lowering properties as well as antioxidant role. **Microbes**- This group largely includes bacteria, and its criteria are that a microbe must be resistant to acid conditions of the stomach, bile, and digestive enzymes normally found in the human gastrointestinal tract, able to colonize the human intestine. Among the bacterial species recognized as having food potential are *Lactobacillus acidophilus*, *L. plantarum*, *L. casei*, *Bifidobacterium bifidum*, *B. infantis*, and *Streptococcus salivarius* subspecies thermophilus. **Minerals**- Several minerals have been recognized for their nutraceutical potential and thus become candidates for functional food recipes. Among the most obvious is calcium with relation to bone health, colon cancer, and perhaps hypertension and cardiovascular disease. Potassium has also been reported to reduce hypertension and cardiovascular disease. Copper, selenium, manganese, and Zinc has also found to have nutraceutical potential, Ayurveda *Rasayana* therapy is very much similar to nutraceuticals but *Rasayana* therapy also includes medicinal plants along with food product except *Ajasric Rasayan* which contain food only, other *Rasayan Kalpanas*, *Vajikaran Kalpanas*, are the mixture of food and drugs. It also says that *Rasayana Sevan(consumption)* must be started at an early age, different *Rasayanas* are prescribed for the different seasons and different age, and different diseased condition.

CONCLUSION

Nutraceuticals are natural bioactive materials that provide demonstrated physiological benefits or reduce the risk of chronic disease, above and beyond their basic nutrition function various micronutrients are extracted from the different plant or animal sources and supplemented along with food to increase the nutritive value of food. Primary principal of Ayurveda is also to keep the body healthy. But Ayurveda has a broader vision because *Rasayana Chikitsa* means rejuvenation therapy. Rejuvenation means to return to youthful condition or to the normal from a diseased state, it also talks about *Achar Rasayana* that proves mental stability, Which is equally important for physical stability. Ayurveda also described *Rasayana* to pacify Doshik imbalance. The association of nutraceuticals with traditional medicine is bound to bring the long-lasting consumer acceptance when supported by current modern medical research.

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