



**REVIEW ARTICLE**

**OPEN ACCESS**

## **Nutraceuticals with Ayurveda approach: A review**

**Meghna Singh, Tanvi Dodiya, Guno Sindhu Chakraborty**

Department of Pharmacognosy, Parul Institute of Pharmacy & Research, Parul University, Limda,  
Vadodara - 391760, Gujarat, India.

**\*Corresponding Author:** Tanvi Dodiya

Email: [tanvi.dodiya@paruluniversity.ac.in](mailto:tanvi.dodiya@paruluniversity.ac.in)

### **ABSTRACT**

*A term that combines the words "nutritional" and "pharmaceutical," "nutraceutical" denotes foods and dietary items that have medical and health advantages, such as aiding in the prevention or treatment of disease. In recent years, the demand for nutraceuticals has skyrocketed, driven by the public's increased emphasis on health. Nowadays, nutritional supplements are available to everyone. The US nutraceutical industry is worth around \$86 billion USD. In European countries, this figure is slightly higher. After adverse drug reactions, many people seek relief through dietary changes or nutraceuticals. The rich Indian culture has provided evidence that foods may be used as medicine to heal and prevent illnesses. Ayurveda mentions Ahara's medicinal qualities. It is cheap, easily accessible, and may take many forms (even a kitchen cure). Presently available medicinal food is totally lacking in value and pharmacological uniformity. The health risks associated with chemically processed meals are comparable. In Ayurvedic texts, the concepts of Ahara and Vihara are extensively described. Advice on healthful diet may be found in a number of classical texts, ranging from the more contemporary Bhavaprakash to the earlier Charak samhita. Research on illnesses and ways to improve health should be prioritized. A man won't require medication if he continues to eat healthily. Innovative treatment won't help if he doesn't stick to his diet. This article delves into the nutraceutical sector, discussing topics such as nutrition from an Ayurvedic viewpoint, the present regulatory landscape, and the potential and actual applications of Ayurvedic nutraceutical combinations for various disorders.*

**Keywords:** Nutraceutical, Standardization, Pathya - Apathya, Ayurveda, Health, Nutrition.

Received 19.04.2024

Revised 29.05.2024

Accepted 21.06.2024

### **INTRODUCTION**

In India, the idea of nutrition is not well understood. A small percentage of people are eating enough food. The three forms of malnutrition are undernourishment, over nourishment, and calorie-sufficient but nutritionally insufficient. The third has the largest share among the three. The term "nutraceutical" has diverse meanings in different parts of the world due to its relative freshness. A few wealthy countries passed laws as early as 2004. Nutraceuticals are referred to by several different names in Canada, including "Dietary supplements" and "Natural Health Products." The word "nutraceutical" refers to a wide range of American foods that offer health advantages over and above their usual nutritional content. These kinds of products frequently make grand claims about their ability to prolong life, prevent chronic illnesses, enhance health, and slow down the aging process. Nutraceuticals include things like medical foods, functional meals, and dietary supplements. The hectic pace of modern life has overshadowed the significance of taking care of one's health. The need of preserving good health has been seriously discussed by people all over the world in light of the current pandemic and the planned consequences of future crises. These days, diet and lifestyle modifications are the primary priorities. In this context, several pharmaceutical companies became interested in the growing combination of "Nutrients" in pharmaceuticals. A variety of nutraceuticals were produced after then (1). These pharmacological dose forms are based on the delivery of vital nutrients to the organism. These products should be used to get the intended results, according to recommendations from several international medical centres. The popularity of protein supplements has skyrocketed, especially the ones that are high in protein yet low in calories. Over time, this could cause significant stress to your internal organs. The liver was unable to tolerate the early metabolism of these nutraceuticals due to their high digestibility, which resulted in liver failure. After utilizing these products for a long time, some persons had liver impairment. Nutraceuticals is a new area that combines pharmacological techniques with wellness trends to explore the possible health advantages of naturally occurring substances present in food. The nutraceutical industry has become interested in

Ayurveda, a 5,000-year-old Indian holistic medical tradition. Ayurveda, frequently referred to as the "science of life," promotes equilibrium in the body, mind, and spirit in order to attain optimal health. The Ayurvedic concept is that nature contains all the components required for health and healing. This theory states that foods and plants can be used medicinally. Combining Ayurvedic principles with the research, production, and use of nutraceuticals is a novel approach to health. According to Ayurveda, achieving harmony and well-being involves modifying one's diet and lifestyle based on their dosha. Nutraceuticals that aim to treat specific ailments or improve overall health might be developed with the guidance of Ayurvedic holistic health principles. In Ayurvedic medicine, medicinal herbs, spices, fruits, and other botanicals are used to maintain and enhance health. Recent studies on the mechanics and therapeutic uses of these traditional drugs have improved their efficacy. Modern scientific techniques for extraction, formulation, and delivery can improve the efficacy and bioavailability of Ayurvedic nutraceuticals. Ayurveda and nutritional supplements can help with digestive system disorders, inflammation, stress, and mental health issues. Combining modern science with traditional medicine allows for a more holistic approach to health. This combo is well-liked by people seeking long-term, all-natural health benefits. This insightful study on nutraceuticals explores herbal medicines, Ayurvedic principles, and the current and potential future paths of this exciting topic. In order to achieve overall wellbeing by fusing tradition and innovation, we investigated Ayurveda and nutraceuticals **(2)**. A thorough analysis of the Ayurvedic scriptures reveals that our predecessors employed this tactic in a very special way. Aahar Varga, Ashto Aaharvishi Visheshayatana, and Rasayana's idea cover almost all facts of contemporary nutraceuticals in a sufficiently comprehensive manner. This article, which is based on a limited number of sources, discusses traditional nutraceuticals and the therapy they offer **(3)**.

### **AYURVEDIC CONCEPTS**

Nutraceuticals cannot be compared as such to any of the fundamental ideas of Ayurveda. However, it uses distinct contexts to discuss nutrition, dietary supplements, patient eating regimens, and health combinations for care ranging from juvenile to geriatric. Appropriate medicated foods are mentioned beside the therapy descriptions. Seasonal regimens (Ritucharya) provide comparable references. There is evidence of its effect in conventional practice. As an illustration, Oushadha kanji, a famous medicated meal preparation in Kerala, is meant to combat the loss of appetite that is expected to occur during the rainy season. For certain medical situations, similar gruel formulations containing some ash or raw medications are recommended. The Kasyapa Samhita's author, Acharya Kasyapa, refers to food as maha-bheshaja, or great medicine, in his work. The word "pathya" refers to both personal hygiene (Pathya Vihara) and Pathya Ahara. Nutraceuticals could be included in the Pathya Ahara idea. For healing and recuperation, both healthy and ill individuals refer to the Pathya Kalpana (Ayurvedic dietetics). Another nutraceutical concept is rasayana. Rasayana, in its broadest sense, is an idea that presents every benefit associated with nutraceuticals. Its importance is evidenced by the fact that Ayurvedic Ashtangas include it. Acharyas proposed treatment, therapy, and patient rehabilitation under this heading. Rasayana and Nutraceuticals have completely different conceptual underpinnings. Ayurveda says that if a man does Rasayana for the prescribed duration, he becomes more energetic and lives longer. It needs to be taken on its own in the morning, exactly like a dietary supplement, before meals. Basically, the Ayurvedic view of nutraceuticals can be classified according to age group, disease, and preventative medicine. In Ritucharya and Pathya Kalpana, nutraceutical refers to the Rasayana medicines, beverages, and meals **(4)**.

### **Prophylactic Nutraceuticals**

Acharyas provide us with important preventative Nutraceutical combinations in the rejuvenators chapter and within the framework of illness treatment. Everything a balanced diet needs, including protein, fat, carbohydrates, minerals, and vitamins, is included. All of the components in a standard Rejuvenator combination are present in their natural forms. Numerous more are also useful; they include Oushadha kanji, Ksheerapaka, Krushara, Nimbupanaka, Sariva panaka, Madhudaka, Rasaala, Kalahamsam, and hundreds more.

### **Nutraceutical for Geriatric Care**

There are changes in the body's physiology, psychology, and immune system that occur with ageing. The author of the Sarangadhara samhita, Acharya Sarangadhara, lived in the thirteenth century and provided a lovely description of the ten important things that deteriorate with each passing year. A loss of energy and function, making one more susceptible to illness, is a common symptom. We must undergo this tenfold reduction while producing nutraceutical goods for geriatric care. The use of herbal medicine, specifically Rasayana therapy, can postpone the ageing process or the decline of these items. Ayurvedic Nutraceuticals may be better for physical, emotional, and spiritual well-being.

### **Nutraceuticals with Ayurveda benefits**

Nutraceuticals, a type of food supplement with added health benefits, and the ancient Indian medical system Ayurveda sometimes intersect. Ayurvedic doctors frequently use all-natural substances like oils,

minerals, and herbs to help patients feel better. Several nutraceuticals derive their health benefits from Ayurvedic concepts and ingredients. Some well-known nutraceuticals with Ayurvedic use are :

**Turmeric:** Curcumin, found in turmeric, is an antioxidant and anti-inflammatory molecule. Turmeric is revered in Ayurveda for its ability to promote healthy joints, digestive tract, and general energy.

**Ashwagandha:** Ashwagandha is a plant that supports general health and aids the body in adapting to stress. Energy, sleep, and mental clarity are all areas where it finds widespread usage in Ayurvedic therapy.

**Triphala:** The Ayurvedic trinity of amla, haritaki, and bibhitaki is known as triphala, and it can help with digestion, cleansing, and overall intestinal health.

**Brahmi:** The herb brahmi is well-known for the cognitive benefits it provides. Memory, focus, and general brain health are all areas that it helps within Ayurveda.

**Guggul:** Ayurvedic practitioners employ guggul, a resin from the mukul myrrh tree, to encourage good weight control and maintain normal cholesterol levels.

**Shatavari:** One revitalizing herb that is especially good for women's health is shatavari. It is utilized in Ayurveda to promote a healthy reproductive system, maintain hormonal equilibrium, and enhance general energy.

**Tulsi (Holy Basil):** As an adaptogenic herb, Tulsi has great sanctity in Ayurveda and finds widespread application in the treatment of stress, immune system disorders, and respiratory ailments.

**Neem:** Bitter Neem has antimicrobial, anti-fungal, and blood-purifying capabilities. Its Ayurvedic uses include promoting healthy skin, enhancing immunological function, and aiding in general detoxification.

**Trikatu:** Trikatu is a blend of three warming spices ginger, black pepper, and long pepper that's used in Ayurveda to support digestion, metabolism, and respiratory health.

**Gotu Kola:** The restorative qualities of the herb gotu kola have made it famous. Ayurveda prescribes it to promote healthy skin, blood flow, and mental acuity.

These nutraceuticals offer a comprehensive approach to physical and mental health by drawing on the wisdom of Ayurveda. It is crucial to see a physician before including any new nutraceutical or supplement in your regimen if you are already taking any medications or have any prior health conditions (5).

#### **Classification of Nutraceuticals**

The phrase nutraceutical encompasses a wide range of products. Nutraceuticals are a broad category that includes a wide variety of goods.

- Dietary supplements
- Functional foods
- Pharmaceuticals
- Medical foods

**Dietary supplement:** The goal of consuming dietary supplements is to augment the nutritional content of the diet using products that include nutrients that are naturally present in food. These come in a variety of concentrated forms, including liquids, pills, and tablets. The following nutritional supplements are included in it (6).

**Nutrients:** Substances such as fatty acids, minerals, antioxidants, amino acids, and vitamins are dietary components. Vitamins are essential for enzyme systems and metabolism. Minerals are essential for growth, DNA replication, and immune system function. The proper functioning of the hormone system, the nervous system, the skin, and the hair, in addition to the cell membranes, all depend on fatty acids. Antioxidants slow down the ageing process by preventing free radicals from damaging cells.

**Herbals:** Nutraceuticals, which employ herbs to foster health and protect against chronic diseases, hold tremendous promise. Containing omega-3 fatty acids, flax seed oil and powder are substances having anti-arthritis, anti-inflammatory, analgesic, antipyretic, and astringent properties.

**Phytochemicals:** In addition to their role as nutraceuticals, phytochemicals are secondary metabolites. These compounds have defensive or disease-protective functions; they are not nutrients for the plant. Chief Polysaccharides, phytoestrogens, terpenoids, phytosterols, glucosinolates, carotenoids, limonoids, and isoflavonoids are all examples of phytochemicals. An anti-cancer, anti-heart disease, anti-hypertensive, anti-inflammatory, anti-psychotic, anti-spasmodic, anti-ulcer, anti-parasitic, and anti-related diet rich in phytochemicals may be just what the doctor ordered. A wide variety of foods include phytonutrients and phytochemicals, including beans, fruits, vegetables, whole grains, and herbs. Carotenoids, which are isoprenoids present in a variety of fruits, vegetables, and egg yolks, have anti-carcinogenic, immune-boosting, and UV-protective properties, among other things.

**Probiotics:** To improve the balance of microbes in its intestines, these live microbial feed supplements are used. Lactose intolerance, diarrhea caused by antibiotics, and other gastrointestinal issues can be alleviated with the help of some probiotics. In doing so, they facilitate the synthesis of the enzyme  $\beta$ -galactosidase,

which hydrolyzes the problematic lactose. Probiotics, especially lactobacillus and bifidobacteria, play a crucial role.

**Prebiotics:** Prebiotics are nutraceuticals that aid in the growth and development of probiotics. These meals influence the host by altering the metabolic profile or composition of the gut flora. The unique chemical structures of these short-chain fructo-oligosaccharides make them indigestible to humans. If you want to speed up your metabolism, try eating some prebiotics. They promote the growth of good bacteria like lactobacillus in your stomach. In addition to improving lactose tolerance, it aids in detoxification, dyslipidemia, constipation, and even some instances of cancer. Pulverized foods frequently include insulin, a prebiotic. Two common commercial methods for extracting prebiotics from are hydrolysis of starch or dietary fiber polysaccharides and enzymatic synthesis. A few examples of foods that have prebiotics are beans, chicory roots, garlic, onions, bananas, tomatoes, and alliums.

**Nutraceutical Enzymes:** Enzymes are essential since they are involved in so many different biological processes. Several symptoms, such as obesity, hypoglycemia, and hyperglycemia, can be alleviated by supplementing a nutritious diet with enzymes.

**Dietary Fibers:** The plant-based substances that are not hydrolyzed by digestive tract enzymes but are broken down by gut microbes are known as dietary fibers. Cellulose, hemicelluloses, gum, pectin, lignin, and resistant dextrins are all examples of non-starchy polysaccharides that make up dietary fiber. Dietary fibers' soluble components can slow the stomach's emptying because they can produce bulk and viscosity. This impacts the digestive rate, food absorption, and satiety levels. Reduces bad cholesterol and makes glucose tolerance better (7).

**Functional food/ Fortified nutraceutical:**

Functional food refers to regular food that has been enhanced with components or chemicals to offer a particular physiological or medicinal benefit, in addition to its nutritional worth. Japan pioneered the concept of functional food in 1991. "Nutraceuticals" are utilized when functional foods aid in the treatment or prevention of illnesses other than anaemia. The term is used to describe foods that have been "fortified" with nutrients or synthetic substances. Vitamin D-fortified milk, calcium-rich orange juice, folic acid and fiber-enriched cereal flour are just a few examples of the many foods that have been fortified with nutrients (8).

**Pharmaceuticals/ Recombinant nutraceuticals:**

Composed of the words "farm" and "pharmaceuticals," the term "pharmaceuticals" can be defined. Medical uses of genetically modified crops or animals are more commonly linked to the term "pharmaceuticals" in agricultural circles. Biotechnology has been instrumental in the production of a wide variety of foods that provide energy, including bread, wine, fermented starch, yoghurt, cheese, vinegar, and many more. Biotechnology allows for the creation of probiotics and the isolation of bioactive components through the use of genetic engineering and enzyme/fermentation technologies (9).

**Medical foods**

Medical foods are intended to be taken internally or under a physician's supervision. They are intended to be employed in the dietary management of a specific disease or conditions for which the medical evaluation determines, on the basis of recognized scientific principles, the necessary nutritional requirements. Medical foods that are either prescribed or under medical supervision are governed by FDA regulations. Certain patients with disorders such as hyperhomocysteinemia, pancreatic exocrine insufficiency, cancer cachexia, or genetic anomalies in amino acid metabolism may benefit from supplements (10).

**Nutraceutical approach in Ayurveda**

The elimination of sickness and the promotion of health are the fundamental goals of Ayurveda. Herbs and herbal preparations are an integral element of Ayurvedic dietetics, which places a premium on food for illness prevention and treatment. In addition to meeting the body's nutritional needs, a good diet should also promote overall wellness and ward against illness, says Acharya Charak. An intriguing verse about food from Acharya Lolimbaraja is that if a healthy diet is planned, then medicine is unnecessary; conversely, if a healthy diet is not followed, then medicine is also unnecessary since it will not cure the illness. Beyond the current perspective, the notion of Aahar offers a comprehensive approach. The individualized approach is the basis of Pathya-apathy, Hita-ahita, and Satmya-asatmya. Nutrition is highly valued in Ayurveda for its many health benefits, including Rasayana (the prevention of degenerative changes), Balya (nutrition after illness), Brihan (nutrient deficiency), Jeevaniya (longevity maintenance), Vyadhi-kshmatva (immune system enhancement), and Vajikaran (vigor and vitality maintenance). Ayurveda has a highly developed science of nutrition and diet. While Acharya Charak divided foods into twelve categories, Acharya Sushrut used 10, and both of them used thirteen. Foods are also categorized according to their consistency. Ashita is semi-solid and recommended for the elderly, Khadita is solid and good for young people with healthy digestion, Peeta is liquid and recommended for babies, children, and sick people during the summer, and Leeda is paste-like and good for children, the elderly, and those recovering from illness (11).

## CONCLUSION

The nutraceutical sector is expanding at a steady annual rate these days. Nutraceutical demand is currently shifting from developed to emerging nations. Ayurvedic classics employ both single and multiple medication combinations to maintain health. Today's hurried lifestyle necessitates prepared meals and beverages. There are serious problems with quality in the worldwide market. Internationally available nutraceuticals may make claims about organic or exceptional pairings, but the products' efficacy and safety may be jeopardized by a lack of regulation. The world is turning to the "mother of health science" for true natural products, thus this is the right moment for Indian industry in this area. There are numerous ongoing projects in this area. In the future, government and business working together will be able to access a substantial worldwide market.

## REFERENCES

1. Bhutada, Rajshree Bhagirath, and Langote Govind Bhanudasrao. (2022). "Nutraceuticals in ayurveda; a review." WJPMR 8(2):230–32.
2. Ujjaliya, Nitin, Sanghmitra Dash, and Salil Kumar Jain. (2018). "A review on nutraceuticals in ayurveda." WJPPS 7(5):277–81.
3. Puri, Vivek, Manju Nagpal, Inderbir Singh, Manjinder Singh, and Divya Dheer. (2022). "A Comprehensive Review on Nutraceuticals: Therapy Support and Formulation Challenges." Nutrients. 14(21).
4. Mutnuri, Asantha Lakshmi. (2022). "Ayurveda Implications of Nutraceuticals: Understating Roles in Preventive Medicine." J. Ayurvedic Herb. Med. 8(3):192–96.
5. Verma, Nidhi, Mandip Goyal, and Jitendra Varsakiya. (2019). "Nutraceuticals and Rasayan Chikitsa- A Review." J. Ayurvedic Herb. Med. 5(1):25–27.
6. Radhika, P. R., R. B. M. Singh, and T. Sivakumar. (2011). "Nutraceuticals: An Area of Tremendous Scope." J. Ayurvedic Herb. Med. ; 2(2):410–15.
7. Tiwari, Vinita, and Gyan Chand Kr. Morya. (2018). "A conceptual study on nutraceuticals in ayurvedic perspectives w.s.r. to rasayana." Journal of Global Biosciences 7(1):5350–57.
8. Casey C. F., D. C. Slawson, and L. R. Neal. 2010. "Vitamin D Supplementation in Infants, Children, and Adolescents." Am Fam Physician. 81:745–48.
9. Bhowmik, Debjit, Harish Gopinath, B. Pragati Kumar, S.Duraivel, and K. P. Sampath Kumar. (2013). "Nutraceutical –A Bright Scope and Opportunity of Indian Healthcare Market." Pharma innov.1(11):1–13.
10. Hardy, G. (2000). "Nutraceuticals and Functional Foods: Introduction and Meaning." Nutrients. 16:7–8.
11. Arun, R., Shivakumar, K. P. Dipuram, and A. Aswin. (2016). "Nutraceutical Applications in Ayurvedic Dietetics and Nutrition." Int. j. Ayurvedic med. 4(9):2882–85.

## CITATION OF THIS ARTICLE

Meghna Singh, Tanvi Dodiya, Guno Sindhu Chakraborty. Nutraceuticals with Ayurveda approach: A review. Bull. Env. Pharmacol. Life Sci., Vol 13 [7] June 2024: 103-107