

Nutraceutical : Beneficial for human health

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ABSTRACT

The Greek physician Hippocrates often known as the father of medicine said “let the food be the medicine and the medicine be the food. According to Dr Fillece “Nutraceuticals is any substance that is a food or part of food that provide medicine or health benefit including prevention and treatment of diseases .The term combines the word nutrients (a nourishing food or food component) with pharmaceutical (a medical drug). Nutraceuticals divided into three categories *i.e.* nutrients, herbal and dietary supplements. The food products used as Nutraceuticals can be categorized as dietary fiber, prebiotic, probiotic, PUFA, antioxidants and other different types of herbal or natural foods. Nutraceuticals covers most of the therapeutics areas such as anti- arthritic, cold and cough, sleeping disorders, digestion and prevention of certain cancers, osteoporosis, blood pressure, cholesterol control, depression and diabetes. The era of emergence of nutrients as medicine in the pharmaceutical world is of great importance and draws attention of scientists and researchers towards the appreciable benefits. As health care industry is growing in India, growth of nutraceutical is also increased because people want treat their diseases by improving their health.

Key Words : Nutraceuticals, Nutrients, Herbal, Dietary supplements, Prebiotic, Blood pressure

INTRODUCTION

Nutraceutical are defined as any substance that may be considered a food or part of a food that provide health benefits including the prevention and treatment of disease. The name Nutraceuticals was coined by “Stephen Defelice” in 1989, founder and chairman of the foundation for Innovation in Medicine.

The term Nutraceuticals combines the word “Nutrients” (a food component which nourish the body) with “Pharmaceuticals” (a medical drugs). A Nutraceuticals have physiological benefits that provide protection against chronic diseases.

According to Health Canada defines Nutraceuticals is a food products, but in market availability, they are available in the form of pills or powder form. Now a day’s Nutraceuticals are found in numerous ranges of products in:

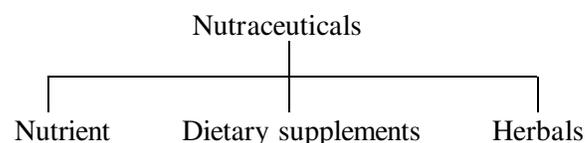
- Food industry
- Pharmaceutical industry

- Agribusiness

Today Nutraceuticals are used in most of the therapeutics areas such as anti arthritis, cold and cough, sleeping disorder, osteoporosis, depression, cholesterol control, blood pressure and diabetes.

Types of Nutraceuticals:

Nutraceuticals are non toxic substances which are used to promote good health and prevent from various diseases. Nutraceuticals classified in the following categories:



Nutrients:

Food provides different types of nutrients that help the body to perform various activities properly. There

are six types of nutrients eg. Carbohydrates, Protein, Fat, Vitamin, Minerals and Water (Table 1).

Table 1 : Various nutrients and its functions	
Nutrients	Health benefits
Vitamin A	Antioxidant, essential, for growth and development and in the treatment of skin disorders
Vitamin E	Antioxidant, helps in the formation of blood cells, muscles, lung and nerve tissue, boosts the immune system
Vitamin K	Essential for blood clotting
Vitamin C	Antioxidant, for healthy bones, gums, teeth and skin, in wound healing, prevent from common cold
Vitamin B1	Helps to convert food in to energy, essential in neurologic functions
Vitamin B2	Helps in energy production and other chemical processes in the body, helps maintain healthy eyes, skin and nerve function
Vitamin B3	Helps to convert food in to energy and maintain proper brain function
Folic acid	Produce the genetic materials of cells, in pregnancy for preventing birth defects, RBCs formation

Herbal:

Herbs or botanicals products as concentrates and extract. Herbals provide a complete storehouse of remedies to cure acute and chronic diseases (Table 2).

Table 2: Herbs and its health benefits		
Herbs	Constituents	Health benefits
Garlic	Alliin and Allicin	Anti inflammatory, antibacterial, antigout antifungal, antithrombotic, hypotensive
Ginger	Ginkgolide and bilobalide	Carminative, antiemetic, memory enhancer antioxidant
Turmeric	Curcumin	Anti inflammatory, anti arthritis, anticancer and anti septic
Onion	Alliin and Allicin	Hypoglycemic activity, antibiotic
Asafoetida	Ferulic acid and umbellic acid	Stimulant carminative, expectorant
Tomato	Lycopene	Most active oxygen quencher, chemo preventive activities.

Food sources used as Nutraceuticals:

The food sources used as Nutraceuticals all are natural and can be categorized as:

- Dietary fibre

- Probiotic
- Prebiotic
- Polyunsaturated fatty acid
- Antioxidants
- Phytochemicals

Dietary fibre:

Dietary fibre is a plant material that is resistant to human digestive enzymes. Based on the solubility of water dietary fibre is divided in to two groups' *i.e.* water soluble fibre and insoluble fibre. Pectin, gums and mucilage are water soluble fibre whereas cellulose, hemicelluloses, modified cellulose and lignins are insoluble fibres. Many researches shows that the risk of heart diseases lowers when the intake of dietary fibre is increased in the diet. Dietary fibre also helps in the treatment of constipation and some types of irritable bowel syndrome.

Probiotic:

Probiotic generally enhance the intestinal micro flora by replenishing the good bacteria and inhibiting the growth of pathogenic flora. Probiotic use enzymatic mechanism to block the toxins mediated pathology. Intrinsic as well as extrinsic factors influence the survival of probiotic in food.

Prebiotic:

Prebiotic are a special form of dietary fibre which is not affected by heat, cold, acid or time provide a wide range of health benefits and nourish the good bacteria. Prebiotic change in the composition of short chain fatty acid (lactic acid, propionic and butyric acid). Prebiotic decreased nitrogenous end products and reductive enzymes. It helps in expression of the binding protein. Prebiotic enhanced immunity.

Polyunsaturated fatty acids:

The group of polyunsaturated fatty acids (PUFA's) is divided into two groups. Omega 3 (n-3) and omega 6 (n- 6) polyunsaturated fatty acids. Food supplemented with omega 3 fatty acids including DHA or EPA provides extra health benefits. DHA and EPA helps in control lipoprotein, blood pressure, cardiac function, endothelial function and have anti platelet and anti inflammatory effects. EPA and DHA are essential for development of brain concentration and the learning ability of children.

Antioxidants:

Antioxidants are important because they neutralize

Table 3 : Some important Phytochemical, their plant sources and medicinal properties

Chemical groups	Plant sources	Medicinal properties
Beta carotene	Fruits and vegetables	Antioxidants
Anthocyanins	Straw berries, cherries, pomegranate, apples	antioxidants
Naringin	Grape fruit	Reduce cholesterol
Tannins	Pomegranate, cocoa and tea	Reduce blood cholesterol
Frolic acid	Apple, orange, peanut, whole wheat and oats	Antioxidant and anticancer
Lignans	Plant cell wall	Reduce skin cancer
Gossypol	Cotton	contracepties

free radicals, which can damage DNA molecules and thereby lead to cancer and other dangerous diseases. Antioxidants also retard the effect of aging. Antioxidants include beta carotene, lycopene, vitamin C, E, A and other substances.

Phytochemicals:

Phytochemicals which provide health benefits are polyphenols, flavonoids, isoflavones, anthocyaniding phytoestrogens, steroids, carotenoids, phytosterols (Table 3).

Conclusion:

Now a day’s demand of Nutraceuticals is growing due to the expansion in the food and pharmaceuticals industries. Nutraceuticals food or food components that help in treatment and prevention of diseases without any side effect. Future demand of Nutraceuticals depends on the relationship between diet and diseases. Nutraceuticals do more than just supplements the diet.

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