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### Nutraceuticals: One more step towards good health

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#### Abstract

The term "nutraceutical" is used to describe any food, or part of a food supplements, that offers a medical or health benefit beyond simple nutrition. They play significant role in modifying and maintaining normal physiological function that is required for today's busy and stressful life style. The principal reasons for the growth of the nutraceutical market worldwide are the current population and their health trends. The food products used as nutraceuticals can be categorized as dietary fibre, prebiotics, probiotics, polyunsaturated fatty acids, antioxidants and other different types of herbal/ natural or functional foods. These nutraceuticals help in countering some of the serious health problems such as obesity, cardiovascular diseases, cancer, osteoporosis, arthritis, diabetes, atherosclerosis etc. Thus, nutraceutical has lead to the new era of health protector in which the food and pharmaceutical industries has become a research oriented sector.

**Keywords:** Nutraceuticals, Oxidative stress

#### Introduction

With the modern and competitive lifestyle and ever increasing stressful conditions, all types of diseases are becoming a big issue for human health. Due to high cost and many side effects of synthetic allopathic medicines, more and more people are now inclining towards use of herbal/natural products (nutraceuticals). Around 80% of population in India depends on nutraceuticals for their primary health care [1]. The term nutraceutical is derived from the words 'nutrition' and 'pharmaceutical'. Thus, nutraceutical is a food or a part of the food which exerts a curative

or preventive effect on disease. These include various nutrients, dietary supplements, herbal products and functional foods. Nutraceuticals of both plant and animal origin hold great opportunities for food and pharma industries to bring out novel products for future needs [2, 3]. Nutraceutical constitutes an effective source of both traditional and modern medicines. These medicines offer a rich source of bioactive phytochemicals and help in reducing risk of various diseases and boosting the overall health of the person (Table 1).

**Table 1:** Phytochemicals of nutraceuticals importance, their sources and role in the prevention of diseases

Phytochemicals	Sources	Health benefits
Catechin	Grapes, berries, cocoa, green tea, acacia spp.	Antioxidants, anticancer, free radical scavenging ability, inhibition of eicosanoid synthesis
Isoflavonoids	Soybeans	Treatment of cancers & osteoporosis
Anthocyanidins	Fruits & Flowers	Antioxidants & anti-mutagenic properties
Glucosinolates	Cruciferous plants	Activators of liver detoxification enzymes, inhibit the neoplastic effect of various carcinogens
Apigenin	Blackberry, Cherry, Orange, Red grapes	Anti-allergic, anti-inflammatory and antioxidant
Allicin	Garlic, Onion	Antibacterial, anticancer, antifungal, chemopreventive, hepatoprotective and neuroprotective
Caffeic acid	Arichoke, Pear, Basil	Anti-inflammatory and antistress properties
Ellagic acid	Cranberry, Grapes, Pomegranate, Strawberry, Walnut	Antioxidant, anticancer and hepatoprotective
Gallic acid	Tea, Mango, Soy, Strawberry	Cytotoxic, antioxidant, anticancer, chemopreventive, hepatoprotective and anti-inflammatory
Quercetin	Red onion, Red grapes, Green tea, Apple skin	Antioxidant, chemopreventive, reduce LDLoxidation and vasodilator
Lutein	Corn, Egg yolk, Spinach	Protect the eyes against the development of age related macular degeneration, cataract, anticancer
Saponins	Chickpea and Soybeans	Lower cholesterol, effective against colon cancer
Resveratrol	Dark grapes, Berries, Peanuts, Raisins	Lower total serum cholesterol and increasing HDL

#### Current global market trend

Nutraceuticals may be divided into herbal/natural products, dietary supplements and functional foods. The report of business

research and consulting firm revealed that functional food will be best ever growing class followed by dietary supplements. The world nutraceutical market is motivated chiefly by

pharmaceuticals in the form of vitamins and mineral as food supplements. In 2012, nutraceutical market in India was estimated at US \$ 2 Billion, roughly 1.5 percent of the global nutritional industry <sup>[4]</sup>. In present day scenario, Indian market is attempting to incorporate herbal ingredients into the nutraceutical products. Rising consumption of dietary supplements among the baby boomer generation and booming food and beverages market is driving the US nutraceutical market that is expected to reach USD 96 billion by 2022, at a 6% CAGR (Compound annual growth rate). The United States is still expected to dominate functional food market globally by 2022, with an expected CAGR of 8.8% <sup>[5]</sup>. This is followed by Asia-Pacific. 47% of the Japanese population consumes nutraceutical products, which can be contributed to the growing aging population. Germany, Netherlands and Sweden have emerged as the key nutraceutical innovation hubs in Europe, while the United Kingdom and Spain have emerged as the key test markets for new products, with the European consumers demanding energy providing products that promote healthy teeth, strong bones, prevent digestive health issues, boost immune system and lower cholesterol. Today, 55% of food, 36% of pharmaceutical and 90% of biotech firms are actively involved in research and development of nutraceutical products.

### Conclusion

Response of nutraceuticals varies from person to person. Individual's susceptibility to any particular disease depends on the environmental factors and lifestyle. But the role of nutraceuticals in prevention and cure of various diseases is beyond any doubt. It will be governed by purity, safety and high efficacy without compromising any alteration in human health. Information available presently on nutraceuticals poses a challenge for food technologist, physician and nutritionist as for as its efficacy and purity are concerned. Long term clinical research is needed to scientifically validate their role in different diseases. We believe that development of nutraceuticals with distinctive genetic and ecotype traits has the potential to deliver unique products to the world at large. Development of better characterized and research proven products will help enhance consumer confidence in nutraceutical and functional food products.

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