

# Introduction

The term "Nutraceutical," derived from the terms nutrition and pharmaceutical was coined in 1989 by Dr. Stephen De Felice, (Chairman of the Foundation for Innovation in Medicine).

The term is intended for a nutritional supplement that is sold with the intent to treat or prevent disease and does not have any regulatory definition. Hence, a "nutraceutical" is any substance that may be considered a food or part of a food which provides medical or health benefits, encompassing, prevention and treatment of diseases

# Nutraceuticals

Nutraceutical can be defined as a food or a part of food or a nutrient, which in addition to its nutrient values provides health benefits including promotion of health and prevention of disease. Most of the diseases such as diabetes, cardiovascular, obesity, etc occur due to incorrect diet and life style. Hence nutraceuticals play an important role in disease prevention as well as promoting health.

## Global market overview & growth of nutraceutical segment

The nutraceutical market is predicted to record a revenue of USD 671.30 billion by 2024.

Developing countries have a high prevalence of non-communicable diseases like cancer, diabetes, cardiovascular ailments, etc, Therefore the demand for nutraceuticals is expected to rise in these nations.

Nutraceuticals are also gaining global importance and have become a part of daily diet due to increased risk of diseases due to improper life style and people consciously adapting preventive healthcare measures.

The gradually increasing healthcare expenses are also stimulating the demand for nutraceuticals.

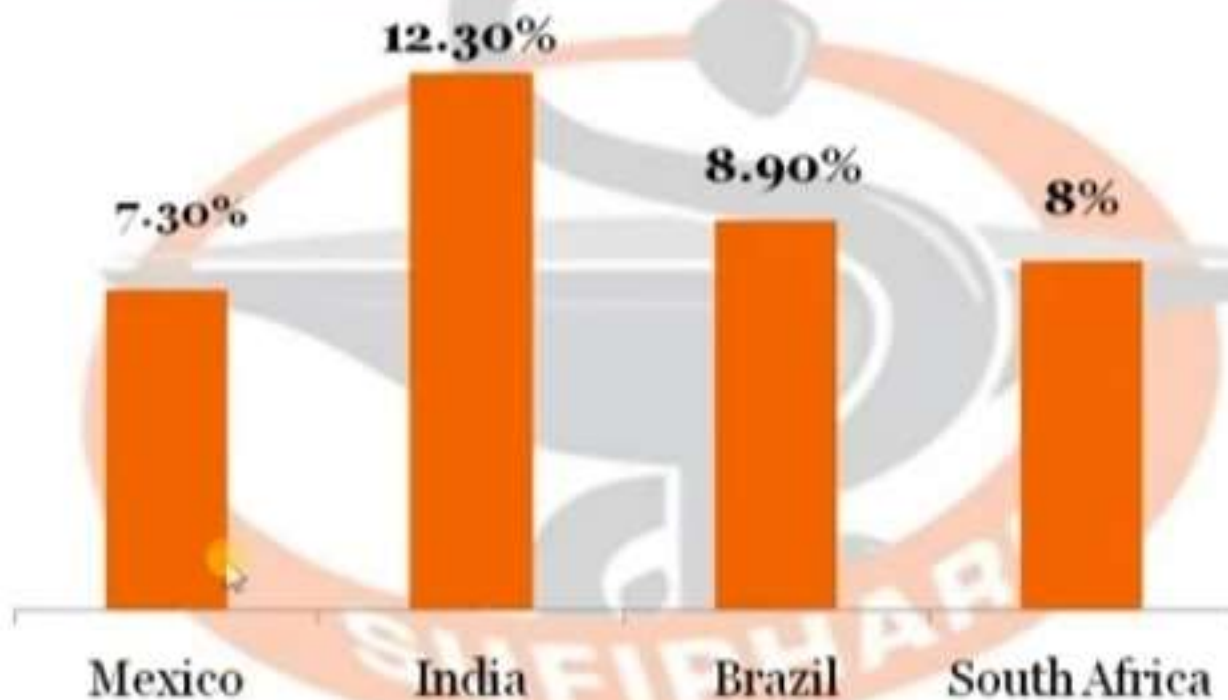
Developed countries like United States and Europe have seen an fast emerging segment of customised products especially functional foods and beverages.

Nutraceuticals have become an opportunity for economic growth of many developing countries which have a rich source of medicinal herbs and traditional knowledge of such plants, especially India, China and South American countries.

**Note:** Nutraceuticals strengthens the body defence mechanism and improves the bodys immunity towards the diseases.

## Nutraceutical Market: CAGR (%), Developing Countries, 2018

Source: Mordor Intelligence



Market growth rate of nutraceuticals in developing countries

Note: CAGR = Compound Annual Growth Rate

## Top global companies dominating the nutraceutical market:

Top global companies dominating the global market include, Pepsico, Kellogs, Herblife, Suntory, Nestle, Amway, Coca cola, Quest nutrition, Natures bounty inc, Post holdings inc, and Clif bar are the major manufacturers in functional beverages and protein industry.

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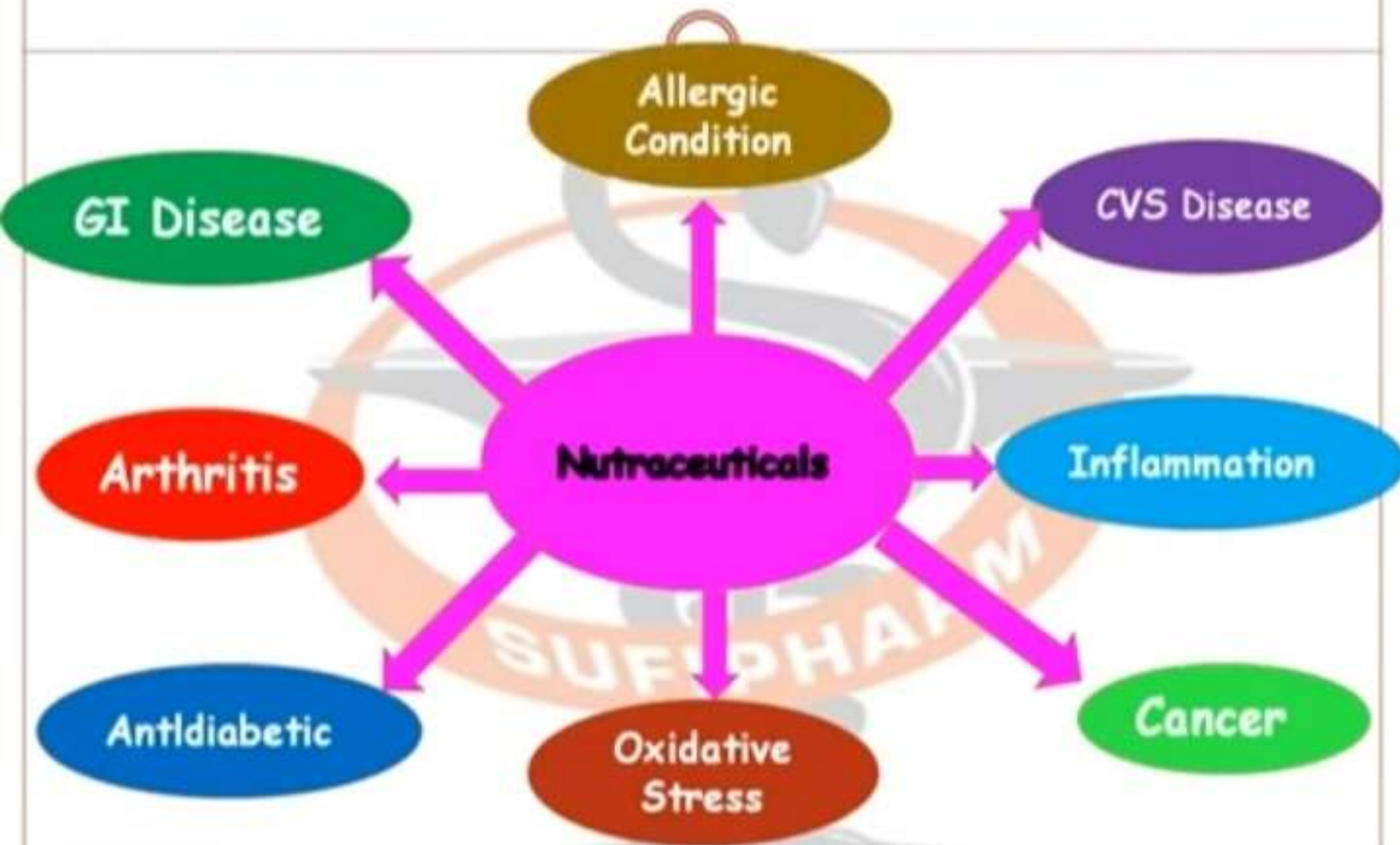
## Scope of nutraceuticals

Nutraceuticals are expected to deliver promising outcomes

in the prevention and occurrence of various diseases resulting due to improper lifestyle and food habits.

Various constituent of plants like catechins, carotenoids, lycopene, polyphenols, PUFA, etc have been very effective in the prevention and occurrence of various diseases like cardiovascular, arthritis, cancer, gastrointestinal disorders, etc.

## Scope of Nutraceuticals





# Types of nutraceutical products available in the market

## Functional Foods

Cereals

Bakery

Confectionary

Dairy

Snacks

Functional Fat, oil

Baby food

## Functional Beverages

Energy drink

Sports drink

Fortified Juice

Dairy Beverages

Tea

Coffee

## Dietary Supplements

Vitamins

Minerals

Botanicals

Enzyme

Fatty acid

Proteins

Probiotics

Prebiotics

## Role of nutraceuticals in various diseases

Plant/ Constituents	Disease
Anti Oxidant Vitamins (Vit-C,E, Carotenoids) Tocopherols, Ascorbic Acid(Fruits, Vegetables)	Cancer Cardiovascular Diseases, Cataracts, Arthritis, Alzheimers Disease
Polyphenols (Tea, Coffee)	Diabetes, Anti-Inflammatory, Antimicrobial, Cardioprotective, Neurodegenerative Disorders
Curcumin (Turmeric), Capsaicin (Capsicum), Gingerol (Ginger), Piperine (Pepper), Eugenol (Clove)	Digestive Disorders, Antimutagenic, Antiinflammatory, Lowers Bad Cholesterol, Antioxidant, Diabetic Nephropathy
Poly Unsaturated Fatty Acids (PUFA)	Cardio Vascular Diseases, Anti Arrhythmic, Hypolipedemic, Antithrombotic, Asthma, Dysmenorrhea, Diabetes
Probiotics, Prebiotics	Gastrointestinal Disorders, Antitumor. Constipation, Toxin Neutralisation

## Note\*:

Antioxidants help in scavenging free radicals and are used in the prevention of cancer.

Polyphenols are well known for their antimicrobial properties.

Polyunsaturated fatty acids (PUFAs) help in reducing bad cholesterol blood levels and lower the risk of heart diseases.

# Classification of Nutraceuticals



## 1. Inorganic mineral supplements

Eg: calcium, magnesium, manganese, boron, copper, zinc, phosphorous, etc.

## 2. Antioxidants

They are present in fruits, vegetables and fishes. They are used to prevent the reactive Oxygen species and free scavenging radicals. Eg: Vit-E, C, A, Beta carotene.

## 3. Poly unsaturated fat acids (PUFA)

These are fatty acids which contain more than one double bond and include essential fatty acids. Eg: Omega-3-fatty acids, safflower oil, corn oil, soyabean oil, fish oil.

#### 4. Probiotics

These are living microorganism, which taken with or without food improve intestinal microbial balance and functioning of large intestine.

Eg. Bifido bacterium, Lacto bacilli, Saccharomyccs cerevisiae etc.

#### 5. Prebiotics

These are non digestible substances that provide beneficial effect and protection to the prebiotic from gastric acid and digestive enzymes. They are also promote the growth of probiotic bacteria.

## 6. Dietary fibers

They are two type in fruits, viz: water soluble fibers and water insoluble fibers. They are present in fruits, vegetables, grains, legumes, etc. They are used to correct constipation, bowel irregularities, haemorrhoids.