



“Nutraceutical & Its Impact on Health Care.”

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ABSTRACT:

Nutrition is a combination of the words "nutrition" and "pharmaceutical." Nutraceuticals are foods or parts of foods that play a substantial role in changing and sustaining normal body functions. It is a physiological function that keeps people healthy. The present demographic and health trends are the primary drivers of the nutraceutical market's global expansion. Dietary fibre, prebiotics, probiotics, polyunsaturated fatty acids, antioxidants, and other forms of herbal/natural foods are examples of food products utilised as nutraceuticals. These nutraceuticals aid in the treatment of some of the century's most pressing health issues, including obesity, cardiovascular disease, cancer, osteoporosis, arthritis, diabetes, and cholesterol.

Keywords: Nutraceuticals, nutritional supplements, probiotics, and antioxidants.

INTRODUCTION:

Herbal medication is in high demand these days. All forms of diseases are having a field day as a result of the modernised, competitive lifestyle and ever-increasing stressful situations.

Cure using allopathic medicine is accessible for the majority of illnesses, albeit at a cost. To begin with, the expense of medicine, like all other goods, is rising on a daily basis. Second, allopathic drugs are linked to a slew of negative side effects. As a result, an increasing number of people are adopting a healthier lifestyle and relying solely on herbal goods. This aids in the prevention of numerous ailments as well as improving a person's general health. Plant medicine, often known as herbal medicine, is a valuable source of both traditional and modern medications. It is more popular among rural residents, with over 80% of them using it.

Phytochemicals are those components that can act as-

1. substrates for a variety of biological processes.
2. Different enzymatic reactions' cofactors and inhibitors
3. Intestinal absorbents/sequestrants that bind to and remove undesirable constituents.
4. Ligands that bind to cell surface or intracellular receptors as agonists or antagonists.
5. Chemical scavengers.
6. Compounds that help essential nutrients absorb and/or stay stable.
7. Beneficial gastrointestinal bacteria growth factors are selective.
8. Fermentation substrates for beneficial oral, gastric, and intestinal bacteria, as well as selective inhibitors of pathogenic bacteria in the gut.

Nutraceuticals are foods that contain phytochemicals like these. The words 'nutrition' and 'pharmaceutical' combine to form the term nutraceutical. As a result, a nutraceutical is a food or a element of a food that has anti-inflammatory parcels. lists some of the major conditions for which nutraceuticals are specifically designed for treatment, forestallment, or support.

The phytochemicals present in these foods have a wide range of remedial goods against a number of conditions like diabetes, heart complaint, common cold wave, arthritis, cancer, hypertension, dyslipidemia, seditious bowel complaint, depression etc. composites like phenylpropanoids, isoprenoids, polyphenols, anthocyanidins, flavonoids, terpenoids, carotenoids, sphytoestrogens and alkaloids etc are responsible for the salutary goods of a diet rich in fruits and vegetables. Melatonin(N- acetyl-5-methoxytryptamine) is also set up in factory diets which produce kynuramine, a biogenic amine, through oxidative metabolism. Kynuramine improves smitochondrial metabolism, acts as a cyclooxygenase- 2 asset and is an important antioxidant.

The interface between the nutritive terrain and cellular/ inheritable processes is nominated as s ' nutrigenomics '. It provides a molecular enlightenment of phytochemicals serving mortal health by altering the expression or constitution of genes. This leads to an revision in Nutrigenomics is the study of the relationship between the salutary terrain and cellular/ inheritable processes. It gives a scientific understanding of phytochemicals that ameliorate mortal health by modifying gene expression or structure. As a result, the starting process is altered.

The onset and course of certain conditions. As a result, nutrigenomics plays a critical part in the use of nutraceuticals in the forestallment of geriatric and complaint by proving inheritable information. Emerging trends in nutraceuticals. Herbal/natural products, dietary supplements, and functional foods are all examples of nutraceuticals. Herbal/natural items are the fastest growing segment, followed by dietary supplements. Scientific study has established a correlation between plant-based nutrition and good health.

Has led to the discovery of antioxidant and other health-promoting characteristics in plant bioactive substances. Fibre consumption in the form of fruits, vegetables, and whole grains has been associated to a lower risk of chronic diseases such as cancer and cardiovascular disease. If cancer is not treated early enough, it develops into a chronic, progressively complex process that leads to metastasis. Epidemiological studies have now established that dietary variables can influence carcinogenesis. A variety of phytochemicals, as well as some meals derived from plants.

Anti-carcinogenic and anti-mutagenic characteristics have been discovered in components that have yet to be named. As a result, future usage of these bioactive molecules as chemopreventive substances cannot be discounted. Isoflavonoids, such as those found in soy products and flaxseed, can lower total and low density lipoprotein cholesterol (LDL-C) while increasing high density lipoprotein cholesterol (HDL-C), lowering the risk of cardiovascular disease (CVDs). Phytoestrogens have also been shown to help prevent cardiovascular disease. Obesity, hyperlipidemia, hypertension, and diabetes are all key risk factors for CVD, all of which can be mitigated by phytochemicals.

Phytochemicals also aid in the reduction of oxidative stress, which has been linked to the development of atherosclerosis. Nutraceuticals aid to strengthen the body's antioxidant defence system.

Scope of Nutraceuticals

1. To antinutritional factors of feed component
2. To activate immunity
3. Growth promotion –promote substantial aquaculture production
4. Nutrition security to fishes and shellfishes and quality nutritional security for human population .
5. Increased feed consumption
6. Induce maturation
7. Antimicrobial capability
8. No negative environmental impact and hazardous problems

Nutraceutical classification -

The sources of nutraceuticals or functional foods can be categorised as follows:

Unnatural or non-traditional vs. natural or traditional

- (a) On the basis of natural source: items derived from plants, animals, minerals, or microbiological sources can be categorised. Traditional Nutraceuticals is the name given to this category.
- (b) Biotechnology-derived nutraceuticals: this category is referred to as Non-Traditional Nutraceuticals.

Nutrients such as vitamins, minerals, amino acids, fatty acids, polysaccharides, and other substances with known nutritional significance.

Herbals, such as aloe vera, wheat grass, ginger, garlic, and others, are products of herbs or botanical goods in the form of concentrates or extracts.

Compounds derived from other sources that are used for specific purposes like sports nutrition, weight-loss supplements, and meal replacements.

Based on food sources, nutraceuticals can be classified as

1. **Fibres in the diet:** These are plant-derived compounds found in food that are not digested in the stomach and give weight to the intestinal contents. Fruits, barley, and other grains are examples. oats, lignin, cellulose, pectin, and other similar substances A high consumption of these fibres in the diet has been linked to a lower risk of cardiovascular disease, hypertension, diabetes, obesity, colon cancer, and gastrointestinal diseases.
2. **The use of probiotics:** These are live microbial feed supplements that, when given in sufficient amounts, aid in the improvement of the host's intestinal microbial balance, such as lactobacilli and bifidobacteria. Their administration has been linked to a lower risk of allergy, asthma, cancer, and ear and urinary tract infection.
3. **Probiotics (prebiotics):** These are dietary components that benefit the host by modifying the composition of the host in a certain way. These have been proven to help with lactose tolerance, detoxification, dyslipidemia, constipation alleviation, and some tumours .
4. **Polyunsaturated fatty acids (PUFAs):** Omega 3 fatty acids, such as -linolenic acid, eicosapentaenoic acid, and docosahexaenoic acid, found in fatty fishes, flaxseed, and soybean, or omega 6 fatty acids, such as -linoleic acid and arachidonic acid, found in corn, safflower, sunflower, and soybean, among others .
5. **Vitamins that are anti-oxidants :** Vitamin C, vitamin E, and carotenoids are among them. These vitamins are plentiful in many fruits and vegetables and have abilities that prevent lipid peroxidation and quench singlet oxygen. These should be consumed on a regular basis to help avoid a variety of disorders.
6. **Polyphenols are a type of antioxidant :** Plants produce these phytochemicals to defend themselves from photosynthetic stress and reactive oxygen species, such as flavonoids, anthocyanins, and phenolic acids. These are endowed with Foods like legumes, tea, and soybeans, among others, have anti-inflammatory and antioxidant qualities.

properties. Beta carotene, which can be found in yellow and orange fruits, has anti-cancer properties. Colorectal and lung cancer risk is reduced by eating cruciferous vegetables.

Diabetes

Nutraceutical-rich herbal dietary supplements have been shown to help people with type 2 diabetes. Omega 3 fatty acid from soy isoflavones reduces mortality and Diabetes incidence is reduced, insulin sensitivity is improved, glucose tolerance is reduced, and blood sugar levels are normalised. The spices fenugreek and cinnamon, as well as universal antioxidants such as lipoic acid and catechins, are utilised to treat diabetic neuropathy, nephropathy, and retinopathy. Magnesium, chromium, calcium, and vitamin D all help to increase insulin sensitivity and glycemic management, among other things. Caffeic acid lowers blood glucose levels in insulinresistant people.

Obesity

Obesity is a medical disorder defined by an excess of body fat buildup. Nutraceuticals with antiobese characteristics include conjugated linoleic acid, capsaicin, and psyllium. Chitosan, caffeine, fenugreek, vitamin C, and other herbal nutraceuticals. Body weight is reduced by green tea, curcumin, black gramme, and bottle guard. They release leptin and other cytokines such as IL-1 and IL-6, which aid in the reduction of LDL and total cholesterol as well as the regulation of food intake.

Osteoarthritis

Osteoarthritis is a complex disease that affects all joint tissues and is caused by a combination of biochemical and mechanical mechanisms that work together to degrade cartilage. Joint pain causes a decrease in physical activity, which leads to an energy imbalance and weight gain. To treat the complications, nutraceuticals such as chondroitinsulphate, glucosamine, diacerin, banana, ginger, green tea, pomegranate, boswellia, oxaceprol, tipi, willow bark, curcumin, avocado, soybean, and collagen hydrolysate are employed. Along with their typical function as a food, they have pharmacological effects and play a vital role in the regulation of gene expression. Antioxidant nutraceuticals have a lot of evidence for treating inflammation, pain, and joint damage.

INDIA'S NUTRACEUTICAL MARKET

India is one of the few countries where there are no set criteria for defining dietary supplements as either diet or medicine. Nutraceuticals are items that improve or prevent health and are not regulated as severely as the pharmaceutical business. The facility is being used by Indian pharmaceutical companies to market a variety of nutraceuticals to diverse segments of the population. The number of products 'enhanced' with vitamins and other health-related things on the market is steadily expanding.

Nutraceutical Products

1. Liquid Prenatal Vitamins
2. Vitamin D3
3. Garcinia Cambogia
4. Raspberry Ketones
5. Green Tea Supplements
6. Echinacea
7. Probiotics
8. Omega 3 Fatty Acids
9. Alpha-lipoic Acid 10. Vitamin B12

CONCLUSION

Nutraceutical can provide significant health benefits, especially in the prevention and treatment of acute and chronic diseases in human beings. However, its progress is contingent on its success.

Supplementation studies and clinical trials in people, as well as quality, safety, long-term adverse effects, and toxicity. Nutraceuticals, such as enzymes, probiotics, and fortified foods, are used to try to avert genetic problems. To have a positive impact on an individual's health, commercial nutraceuticals must satisfy severe regulatory restrictions.

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