

A Review on Nutraceutical: The Combination of Nutrition and Pharmaceutical

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Abstract

The combination of two words, "Nutrition" and "Pharmaceutical" lead to the word or term "Nutraceutical". Basically nutraceutical is a food or part of food, which plays an important role in normal physiological function, which helps to maintain human health. Now a days all people are conscious about their daily diet and health. In India many people have preconception or prejudice about nutrition and health. India is a developing country. So many people of rural areas are suffering from non-communicable diseases and disorders due to lack of proper knowledge about nutrition, food and diet. The present article provides some information about "Nutraceutical and human health.

Keywords: Palm nutraceutical; Nutrition; Pharmaceuticals; Prebiotic; Probiotic dairy products; Functional foods; Anti-inflammatory activity; Anti-oxidant properties; Anti-carcinogenic agents

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Introduction

The word "Nutraceutical" is combined of two words, "Nutrition" and "Pharmaceutical". It is defined as a food or part of food which provides nutritional and medicinal health benefits and helps to prevent many diseases [1,2]. It consists of herbal products, food supplement, probiotics and prebiotics which have medicinal health benefits including treatment and prevention of disease [3].

Category of Nutraceutical

Dietary supplements

Dietary fiber is a non-digestible carbohydrates and lignins that are intrinsic and intact in plants. Functional fiber consists of isolated non-digestible carbohydrates that have beneficial physiological effects in human. Total fiber is the sum of dietary and functional fiber. These definitions broaden the category and allow resistant starches, oligosaccharides and other non-digestible carbohydrates to be classified as functional fibers [1]. Intake of adequate amount of dietary fiber helps to control constipation and other digestive related health problems.

Vitamins and minerals are essential for human body for bone health, eye health, skin health and for maintaining immune system. Vitamins and minerals are mainly present in fruits, vegetables.

Enzymes are an essential part of life, without which our bodies would cease to function. When people are suffering from medical conditions such as hypoglycemia, blood sugar disorders, digestive problems and obesity then enzyme supplement diet helps to control symptoms of these diseases. These enzymes are derived from microbial, plant and animal sources [4-7].

Functional probiotic dairy foods as nutraceuticals

- Cheese is one of the most common probiotic dairy products that have high potential to carry bacteria. The number of probiotic bacteria in cheese can be more than 10 million and this microbial mass in cheese have more protective effects on probiotic bacteria in comparison to yogurt because of its chemical and physical properties such as low pH, high buffering capacity, high nutrients and high fat levels. Therefore, cheese has been one of the main sources of probiotic microorganisms. Probiotic cheese is beneficial for controlling lactose intolerance problems [8]
- Probiotic Yoghurt is a most common beneficial fermentative dairy product which is prepared from milk and is produced by lactic acid bacteria. In production of yoghurt two starters are used including *Streptococcus thermophilus* and *Lactobacillus bulgaricus*. But none of the above can survive the digestive tract, thus aren't able to provide probiotic properties since

they're destroyed under acidic conditions. Acid-resistant species must be used. Yoghurt is produced by adding *probiotic Lactobacillus* and *Bifidobacterium* in the presence or the absence of starter. Many types of yoghurt with different probiotics have been produced around the world. Probiotic yogurt in addition to their nutritional value, have an important role in fighting against the pathogens. Probiotic yogurt is beneficial for controlling diarrhoea, Inflammatory Bowel Diseases (IBD), Lactose Intolerance Problem etc

- Ice cream is one of the safe, nutritional and frozen dairy products which are widely consumed around the world. Considering its nutritional values, ice cream is a great source of essential amino acids of milk proteins, vitamins and minerals, and its components are easily digested and absorbed in the body [9]

Nutraceuticals and diseases

Nutraceutical against cardiovascular disease: As nutraceuticals, dietary fibre, omega-3, polyunsaturated fatty acid, antioxidant help to prevent and control arterial diseases. Rice bran which contains high dietary fibre helps to lower down the serum cholesterol level (helps to lower down the Low Density Lipoprotein and increases the High Density Lipoprotein) in cardiovascular health. Rice bran has both Lutein and Zeaxanthin, which are beneficial for the health of eyes, which helps to reduce the chances of cataracts. Rice bran also contains omega-3, omega-6, omega-9 fatty acid and also contains folic acid which helps to remove free radicals from the human body. It was revealed that inadequate intake of fruits and vegetables lead to cardiovascular diseases [4,5].

Nutraceutical for controlling Diabetes Mellitus: In modern life diabetes mellitus is a very common non-communicable disease. Various nutraceuticals have beneficial effects to control diabetes mellitus. Ethyl esters of n-3 fatty acids may be helpful in diabetic patients. Docosahexaenoic Acid (DHA) modulates insulin resistance and is also vital for neurovisual development. Dietary fibers from psyllium have been used for glucose control in diabetic patients and helps to reduce lipid levels in hyperlipidemia. Lipoic acid, an antioxidant used for the treatment of diabetic neuropathy.

Nutraceutical against obesity: Now a days all people are conscious about their body weight. Nutraceuticals such as capsaicin conjugated linoleic acid, psyllium fiber, momordicacharantia contain potential anti-obese properties. So nutraceutical helps to control obesity.

Cancer: Soya bean, garlic, ginger, tea as well as propolis, honey and others nutraceuticals have phytochemicals, chemopreventive activities which help to reduce cancer.

Nutraceutical as an anti-inflammatory compound: Curcumin of turmeric is a polyphenol which has anti-carcinogenic, anti-oxidant and anti-inflammatory activity or properties. Beetroot, cucumber, fruits, spinach leaves, and turmeric rhizoms have anti-tumor activities which help to remove free radical from human body. Gamma linolenic acid of green leafy vegetables, nuts, vegetables oils like blackcurrant seed oil and hemp seed oil are beneficial against inflammation and immune diseases.

Nutraceutical against osteoarthritis: As nutraceuticals, Glucosamine (GLN) and Chondroitin Sulfate (CS) are mostly used to relieve the symptoms of osteoarthritis. Osteoarthritis, a debilitating joint disorder, Joint discomfort from osteoarthritis and other joint disorders may reduce physical activity in individuals experiencing this condition, resulting in energy imbalance and weight gain. Increased weight can exacerbate existing problems, through additional stress on joints [10]. These nutraceuticals have both nutrient and pharmaceutical properties and help to regulate gene expression and synthesis of NO and PGE2, providing a plausible explanation for their anti-inflammatory activities [11,12].

Conclusion

Nutraceuticals have anti-oxidant, anti-inflammatory and anti-carcinogenic properties which help to control various diseases or disorders. This should be taken according to their acceptable recommended intake. As nutraceuticals, probiotic dairy products (yogurt, cheese, ice-cream) also have beneficial effects on human digestive system and help to control diarrhoea, constipation, Irritable Bowel Syndrome (IBS), gas formation, Inflammatory Bowel Diseases (IBD), lactose intolerance etc. As nutraceuticals, dietary fibre rich foods (rice bran, wheat bran, fibrous fruits) are very helpful for controlling obesity and help to reduce serum cholesterol level. Some polyphenolic compounds like Flavonones, Flavones, Curcumin, Glucosinolates, Isoflavones, Lignans are also have anti-oxidant, anti-carcinogenic and anti-inflammatory activity that also helpful for human health.

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