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Commentary

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Nutraceuticals and its role in enhancing human health

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DESCRIPTION

Nutraceuticals are food-derived products that are claimed to deliver additional health advantages in addition to the fundamental nutritional content present in meals. Products may promise to prevent chronic diseases, promote health, slow the ageing process, extend life expectancy, or support the structure or function of the body, depending on the jurisdiction. Nutraceutical food items include dietary fibre, prebiotics, probiotics, polyunsaturated fatty acids, antioxidants, and other herbal or natural foods. The market for herbal and dietary supplements, pharmaceuticals, and recently merged pharmaceutical, agribusiness, or nutrition conglomerates all produce items that include nutraceuticals. It could include isolated nutrients, herbal products, nutritional supplements, and diets, as well as processed meals like cereals, soups, and beverages that have been genetically modified. Nutraceuticals are used in conjunction with nutritional therapy since food not only serves as a source of energy and nutrients, but it also has a number of health benefits. Nutraceuticals help our bodies detoxify while also reestablishing a healthy digestive system and eating habits. They can be categorized according to their chemical makeup, mechanism of action, and source of nourishment.

Both natural and processed foods contain nutraceuticals, such as phytosterols, curcuminoids, flavonoids, carotenoids, and certain fatty acids. Numerous of these nutraceuticals may be added to functional or medicinal foods to cure or prevent specific types of cancer because they have the potential to work as therapeutic agents. The chemical compositions, physiochemical characteristics, and biological effects of nutraceuticals vary widely. The molar mass, structure, polarity, charge, and functional groups of nutraceuticals, for instance, vary, which affects their chemical reactivity, physical state, solubility properties, and biological fate and functions. Some nutraceuticals are frequently consumed in this form since they are naturally found in whole foods like fruits, vegetables, and cereals.

On the other hand, certain nutraceuticals are extracted from their natural states and transformed into additives that can be added to medications, dietary supplements, or functional foods. Nutraceuticals supplied the need for complementary or alternative beneficial goods that current illness treatment methods were looking for. The use of nutritional supplements as biological therapies to regulate symptoms, prevent disease, and promote wellbeing is known as nutraceuticals. Different categories in nutraceuticals include nutrients, herbals, dietary supplements. A nutrient is a material with known nutritional benefits, such as vitamins, minerals, amino acids, and fatty acids. Vitamins are found in the majority of vegetables, whole grain cereals, dairy products, fruits, and animal products including meat and poultry and are useful in treating heart disease, stroke, cataracts, osteoporosis, diabetes, and cancer. Minerals in plant, animal, and dairy products help with anaemia, osteoporosis, the development of strong bones, teeth, and muscles, as well as improved nerve signals and heart rhythm.

Omega-3 PUFAs found in flax seed and salmon are powerful anti-inflammatory agents that also maintain brain health and prevent cholesterol buildup. The vitamins that are water-soluble, fat-soluble, and antioxidant-soluble are the most well-known nutrients. Antioxidant use, whether through dietary intake or supplementation, has been linked to a wide range of possible advantages. In general, antioxidants may be helpful in the prevention of cerebrovascular disease and cancer. A high vitamin E consumption may help to avoid Parkinson's disease. Herbs have been used to treat acute and chronic diseases since the dawn of human civilization. Herbal knowledge has accumulated over thousands of years, so that we now have many effective means of ensuring health care. Nutraceuticals hold great promise for improving health and preventing chronic diseases through the use of herbals. Willow bark (*Salix*

nigra), for example, contains salicin, which is anti-inflammatory, analgesic, antipyretic, astringent, and antiarthritic. Parsley (*Petroselinum crispum*) is diuretic, carminative, and anti-pyretic, and contains flavonoids (apiol and psoralen). Peppermint (*Mentha piperita*) contains menthol as an active component and is used to treat colds and flu. Lavender (*Lavandula angustifolia*) contains tannin, which aids in the treatment of depression, hypertension, stress, colds, coughs, and asthma. Cranberries (*Vaccinium erythrocarpum*) contain proanthocyanadin, which has been shown to be beneficial in cancer, ulcers, and urinary tract infections.

Dietary supplements are products that are taken orally and contain a dietary ingredient that is intended to add something to the foods you eat. The Dietary Supplement Health and Education Act (DSHEA, 1994) defines a dietary supplement as "a product that contains one or more of the dietary ingredients such as vitamin, mineral,

herb, or other botanical, and amino acid (protein), as well as any possible component of the diet as well as concentrates, constituents, extracts, or metabolites of these compounds." Black cohosh for menopausal symptoms, ginkgo biloba for memory loss, and glucosamine or chondroitin for arthritis are examples of dietary supplements. They also serve specific purposes like sports nutrition, weight-loss supplements, and meal replacements. Vitamins, minerals, herbs or other botanicals, amino acids, enzymes, organ tissues, gland extracts, or other dietary substances may be found in supplement ingredients. In addition to tablets, capsules, liquids, powders, extracts, and concentrates, they are also available in other dosage forms. Nutraceuticals of both plant and animal origin present exciting opportunities for the food industry to develop novel food products in the future.