

Chapter 6

An Overview and Therapeutic Applications of Nutraceutical and Functional Foods

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ABSTRACT

Healthy nutrition is important for human beings for good health provided by global industry. Nutraceutical and functional food provide a prospect to reduce health care costs and improve the human health. Researchers carried out plenty of work for the preparation of nutraceutical and functional food product. This article also focused on recent advances on the nutraceutical and functional foods product on health benefits and their application in prevention of disease. Here we discussed about the health benefit of recently introduced nutraceutical and functional food products. With the modernised, competitive lifestyle and ever increasing stressful conditions this product is the need of the day.

INTRODUCTION

The nutraceutical is a portmanteau of nutrition and pharmaceutical. Reportedly, S. Defelice (1989), founder and chairperson of foundation for innovation in medicine, defined “any substance that may be food or part of a food and provides medical or health benefits, including the prevention and treatment of disease. Such products may achieved from isolated nutrients, dietary supplements and diets to genetically engineered ‘designer’ foods, herbal products, and processed foods such as cereals, soups, and beverages. According to the International Food Information Council (IFIC), a functional food provides a health benefit beyond basic nutrition (Biesalski, 2001; Keservani et al., 2010a). Any food can be consider as

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functional, on demonstration it can be produce beneficial effect to one or more target functions in the body or reduce disease risk besides basic nutrition (Sarkar, 2007). The nutraceutically and functionally used food products are Vitamins, minerals, trace elements, lipids, amino acid, carbohydrate, flavonoids, plant extracts, and milk etc (Keservani et al., 2010b). The terminology functional foods was first came into light in Japan in the mid-1980s and deal with processed foods having ingredients that help specific bodily functions besides being nutritious. By latest, Japan is the lone nation that has prepared a particular regulatory approval procedure for functional foods. Called as Foods for Specified Health Use (FOSHU), these foods are apt candidates to have a seal of approval from the Japanese Ministry of Health and Welfare (Arai, 1996). The Institute of Medicine's Food and Nutrition Board (IOM/FNB, 1994) defined functional foods as "any food or food ingredient that may provide a health benefit beyond the traditional nutrients it contains" (Meyer, 1998; Keservani et al., 2010a).

Dietary plant flavonoids plays major role in cancer prevention, neuroprotection, and cardiovascular health through their anti-oxidant, anti-inflammatory, pro-apoptotic, and antiproliferative activities (Nordeen et al., 2013). The phytochemicals present in these foods (like phenylpropanoids, isoprenoids, polyphenols, anthocynidins, flavonoids, terpenoids, carotenoids, phytoestrogens and alkaloids etc) have therapeutic effects against a number of diseases like diabetes, heart disease, common cold, arthritis, cancer, hypertension, dyslipidemia, inflammatory bowel disease, depression etc (Iriti & Faoro, 2006). Pomegranate fruit extract (PFE), which contains anti-inflammatory via inhibiting the eicosanoid generating enzymes activity and Nitrous oxide (NO) production (Shukla et al., 2008).

PUFAs (Poly unsaturated fatty acids) and ω -3 fish oils in the diet or taken orally. Investigators have shown that the topical administration of PUFAs has also been effective for dry eye on the basis of preliminary human studies and animal data results (Cortina & Bazan, 2011). It was demonstrated in a randomized clinical trial that lycopene is used as therapeutic agent for prostate cancer (Kucuk et al., 2002). There are various nutraceutical components presents in plant extracts such as γ -linolenic acid, β -carotene, flavonoids etc with potential to reduce blood glucose and A1C levels in diabetics (Kagan et al., 1990; Davies et al., 1997; Sotaniemi et al., 1995; Huseini et al., 2006). Over the last century, researchers reported findings of the first huge level, across the nation investigation of fatty acids in U.S. organic and custom milk and concluded that the consumption of omega-6 fatty acids in western diets have enhanced, whereas omega-3 consumption have reduced, yielding omega-6 to omega-3 consumption ratios have raised to nutritionally unwanted amounts, usually 10 to 15, in comparison with a feasible optimal ratio of 2 to 3 (<http://www.nutraceuticalsworld.com/>).

Berislav Zlokovic studied how the brain's vascular system can assist in the progression of Alzheimer's disease and devised that, this is owing to elevated beta-amyloid accumulation on pericytes in old blood vessels, resulting into disturbing the integrity of the blood-brain barrier and a decrease capability to eliminate amyloid from the brain. Alzheimer's disease is the principal cause of dementia. It is an age-related disease that eventually diminishes a person's memory, thinking, and capability to carry out routine tasks. Brains from Alzheimer's patients generally have abnormally enhanced levels of plaques composed of depositions of beta-amyloid protein juxtaposed to brain cells, tau protein that aggregates together to make neurofibrillary tangles inside neurons, and extensive neuron loss. The European Food Safety Authority (EFSA) summarized in its prime full risk determination of the sweetener like aspartame and its metabolites (phenylalanine, methanol and aspartic acid) are safe for human consumptions at current levels. As per the report of Centers for Disease Control and Prevention (CDC), 75% of total healthcare expenses were spent on caring for people with preventable diseases, with only 3% spent on prevention (<http://www.nutraceuticalsworld.com/>).

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