Recent Advances in Nutraceutical and Functional Food

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Abstract

Food is just fortified into nutraceuticals and functional food. Nutraceuticals or bioceutical is a pharmaceutical alternative which claims nutritional sources. Functional foods are modified food which improve health by providing benefits beyond those provided by traditional nutrients. Eating habits and trends in food production and consumption have healthy environmental and social impacts.Blood pressure effects from different nutraceutical products have been studied with the specific food rich in minerals, lipids, whole protein and amino acid. Nutraceuticals range from isolated nutrients, specific diets to genetically engineered designer food herbal products and processed food such as cereals, soup and beverages. Recent experiment has shown that it may also inhibit plaque formation by bacteria in the mouth by the basic mechanism of inhibiting biofilm formation. Plaque is the primary cause of gingivitis.When there is an increased plaque accumulation, there is also an elevation of microbial count in the saliva and biofilm. The plaque deposition around the gingival margin constituting bacteria that are anaerobic and aerobic is capable of initiating periodontal disease and destruction. Fruits and vegetables contain thousands of biologically active phytochemicals some of which likely interact in a number of ways to prevent disease and promote health. Rapid changes in diet and lifestyle may enhance the expression of the harmful genes, which manifests in a sequence. There is an emergence of chronic disease in developing countries. Both pharmaceuticals and nutraceuticals compounds might be used to cure or prevent diseases. Therapeutic injections like lipotropic injection are also shown to improve the result of diet and exercise.Compounds not suspected of having any antibacterial properties such as pesticide were shown to increase the minimum inhibitory concentrations of antibiotics against a strain of staphylococcus aureus both alone and in conjunction with antibiotics where Carbapenem are often considered to have a broad spectrum of activity .

Keywords: *Blood pressure;Disease;Food supplement;Functional food;Nutraceutical factor.*

Introduction

Food is just fortified into nutraceuticals and functional food. Nutraceuticals or bioceuticals are pharmaceutical alternatives to nutritional sources. Functional foods are modified foods which improve health by providing benefits beyond those provided by traditional nutrients. It also includes items such as cereals, breads and beverages. But the commonest thing of both will be an enhanced physiological benefit. Excluding water, all food is a mix of several macro, micro and phytonutrients and are therefore complex systems [1]. Eating habits and trends in food production and consumption have healthy environmental and social impacts. Diet has implications on gut health that improve complexities such as ulcerative colitis, Crohn's disease , irritable bowel syndrome which result from excessive growth of intestinal microbial flora [2]. The interest in nutraceutical and functional foods stem from research efforts to recognize properties and possible application of the nutraceutical substance ,coupled with public

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attraction and consumer demand [3]. Blood Pressure effects from different nutraceutical products have been studied with the specific food rich in minerals, lipids, whole protein and amino acid [4]. Common genetic variants of Fat mass Obesity also known as alpha ketoglutarate dependent dioxygenase have been positively related with blood pressure in patients with hypertension [5]. Several special nutraceuticals are ginseng, echinacea, omega -3 and cod-liver oil .In current times, nutraceuticals have collected sustainable interest due to possible nutritional safety and medicinal effect [6,7].

Nutraceuticals range from isolated nutrients, dietary supplements and specific diets to genetically engineered designer food herbal products and processed food such as cereals, soup and beverages [8]. Cranberry juice cocktail is now marketed as a functional food with a structure /function claim regarding support of urinary tract health .Recent experiment has shown that it may also prevent plaque formation by bacteria in the mouth by the basic mechanism of inhibiting biofilm formation [9,10,11]. Plaque is the primary cause of gingivitis [12,13]. When there is an increased plaque accumulation, there is also an elevation of microbial count in the saliva and the biofilm. The plaque deposition around the gingival margin constituting bacteria that are anaerobic and aerobic is capable of initiating periodontal disease and destruction[14]. Medicaments [15,16] like kin perio gel can be used to treat gingivitis. There is evidence that certain beverages and food can protect against gingivitis[17].

Fruits and vegetables contain thousands of biologically active phytochemicals some of which likely interact in a number of ways to prevent disease and promote health [18]. They also act as an antimicrobial agent [19,20]. In a study, overweight participants found the consumption of whole pea flour and fractionated yellow pea flour at doses equivalent to half a cup that is used to reduce insulin resistance ,while wholePea flour reduced adiposity in women. Rapid changes in diet and lifestyle may enhance the expression of the harmful gene ,which manifests in a sequence. There is an emergence of chronic diseases in developing countries [21]. Both pharmaceutical and nutraceutical compounds might be used to cure or prevent disease but only pharmaceutical compounds have government sanction with no evident protective effect [22]. Therapeutic Injection [23] like lipotropic injections are also shown to improve the result of diet and exercise. Compounds not suspected of having any antibacterial properties such as pesticide were shown to increase the minimum inhibitory concentrations of antibiotics against a strain of staphylococcus aureus both alone and in conjunction with antibiotics [24] where Carbapenem [25] are often considered to have a broad spectrum of activity .

Nutraceutical Factor:

The proper organizational scheme for nutraceuticals can vary. Conditions like hypertension, hypercholesterolemia, clotting inadequacies related to diabetic conditions etc, are areas these superfoods work on. N-3 fatty acids, phytosterols, quercetin and grape flavonoids are all nutraceuticals. Meanwhile, oncologists may be more interested in those substances that target anticariogenic activities. However, the anticariogenic triterpene limonin being soluble in lipids and bitter to taste, is not used as a functional food ingredient [26]. Legislation therapeutic product or more beneficial to patients mainly protecting public health and assuring is effective [27].

Traditional and Nontraditional Nutraceuticals:

The natural, whole foods we consume are traditional nutraceuticals. With updated information on their nutrient status, we are just inclined to consume them better. The natural nutrients present in the common grains, fruits, vegetables, poultry and dairy products that we consume are beneficial in a holistic manner, providing essentials like Omega-3-fatty acids (as in cod) and lycopene (from tomatoes). Chocolates and teas have been noted in some studies to contain health-benefiting attributes [28]. Foods obtained through agricultural breeding or fortification with nutrients so as to increase their nutritive values, are non-traditional nutraceuticals [29].

Global Demand of Nutraceutical:

In some nutraceutical industries, the segment of dietary supplement of herbal and natural products is not available because of global demand it is commonly regulated[30]. Nutraceuticals are generally reported to have a good safety profile with few unwanted side effects and high bioavailability [31].

Allergy and Nutraceuticals:

Allergy is a hypersensitivity disorder of the immune

system.An allergic reaction usually occurs when a person's immune system reacts to normally harmless substances [32]. An increased activation of white blood cells and basophils by the antibody immunoglobulin E, inflammatory responses are generally mediated, making these reactions due to consuming certain foods unique [33]. Quercetin protects low-density Lipoprotein from becoming damaged especially to blood vessels . Diabetic patients are at higher risk of blood vessels damaged from oxidative stress, quercetin is beneficial in these patients [34].

Food Supplements:

In industrialized countries, there is virtually no restriction on the strength of the nutritional supplement that can be purchased. The significant limitation on the sale of supplements is that the disease and cure related monetary claims cannot be made [35]. Basically, the vitamins, fats, proteins and carbohydrates required in a healthy diet in adequate quantities, are provided by functional foods [36].

Food and Health:

Food habits developed in early infancy , development of food habits is a complex process that may be influenced by factors such as region ,family structure, habit, income and technological advancement [37,38]. Several epidemiologic studies over the last 50 years have clearly shown that diet dominated by fruits, vegetables and some dietary fibres prevent and reduce the risk of chronic disease and promote human health [39] .Dietary intake of fruit , vegetable and whole grains strongly associated with a reduced risk of developing chronic disease such as cardiovascular cancer [40].

Probiotic, Prebiotic and Synbiotic:

Probiotics are living microorganisms which upon ingestion in a certain number exert health benefits beyond inherant basic nutrition [41]. Prebiotic is a specifically fermented ingridient, or a fibre that permits explicit changes, both in the synthesis and additionally movement of gastrointestinal flora and resultantly presenting benefits on the well-being of the host [42]. Synbiotics are the synergistic combination of probiotics and prebiotics [43].

Biotechnology for Functional Food:

Food sources with expanded dietary benefits include stable starchy crops such as yams that have been altered to the substance of starch which has been related to Type II diabetes [44]. Different breeding varieties sometimes lead to malnutrition [45]. Fungi and algae [46] can also be used as functional food as they are rich in marine minerals like iodine, magnesium, potassium and calcium.

Conclusion

Lifestyle of modern age people have faced many challenges, especially health issues such as obesity, osteoporosis, cancer, diabetes and several chronic problems. Nutraceuticals and functional food play an important role in controlling such disease with the health benefit to people .It helps in nutritional, immunology and physiological function with the prevention or treatment of disease.

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