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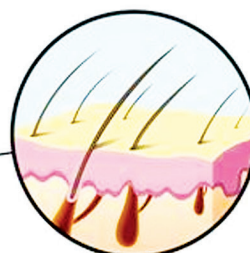
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Menopause - A Gift or Curse?



Changes in mood
and irritability



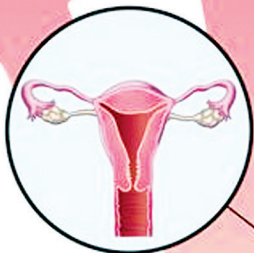
Thinning of scalp hair



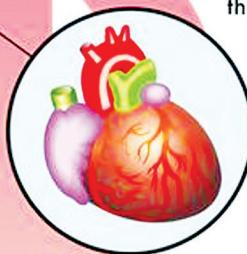
Loss of elasticity and
thinning of the skin



Loss of firmness of
the breast



Amenorrhea and
increased risk
of vaginal infections



Risk of heart damage



Osteoporosis risk



Urinary incontinence
and increased risk
of urinary tract infections

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Nutraceuticals: Emerging Trend in Medicine

SANJAY AGRAWAL

Introduction

Eating habits and trends in food production and consumption have health, environmental and social impacts. Diet has implications on gut health. Gut complications, such as ulcerative colitis, Crohn's disease, irritable bowel syndrome, and gluten therapy resistant celiac, result from overgrowth and imbalance of intestinal microbial flora, and are related to one's diet. Notably, the gastrointestinal tract is sterile at birth; intestinal microflora develops after birth, with the colonization rate varying according to factors such as the mode of birth, infant nutrition, antibiotic use, diet and age. Gut health determines an individual's overall health. Gut malfunction, therefore, has a direct negative impact on human health. From more southern healthy diets (rich in fruits and vegetables), to the northern ones (rich in animal fat and animal food products). In spite of the fact that today's consumers are increasingly attentive to food safety, quality and health-related issues, the population is fighting with the diseases of a modern age such as obesity, osteoporosis, cancer, diabetes, allergies, stress and dental problems increased energy uptake, unbalanced diets, and highly processed foods used in fast food products are huge problems.

Consumers are concerned about how their health care is managed, and priced. The expensive, disease-

treatment approach prevalent in modern medicine has forced the consumer to seek alternative beneficial products and is making nutraceuticals particularly appealing. Nutraceuticals (referred to as phytochemicals or functional foods) are natural bioactive, chemical compounds that have health promoting, disease preventing or medicinal properties. Nutraceuticals are found in products emerging from (a) the food industry, (b) the herbal and dietary supplement market, (c) pharmaceutical industry. The present article reviews the general concept, categories and nutraceuticals need in medicine. The term 'nutraceutical' was coined in 1979 by Stephen DeFelice, founder and chairman of the Foundation for Innovation in Medicine located in Cranford, New Jersey. It was defined as 'a food or part of food, which provides medical or health benefits, including the prevention and treatment of disease¹.

Nutraceuticals range from isolated nutrients, herbal products, dietary supplements and diets to genetically engineered 'designer' foods and processed products such as cereals, soups and beverages. The goal of achieving an optimal or maximal state of nutrition and health is becoming an increasing challenge with the introduction of many nutraceuticals². Nutraceuticals are useful to reduce the risk of cancer, heart disease and also to prevent or treat hypertension, high cholesterol, excessive weight, osteoporosis, diabetes, arthritis, cataracts, menopausal symptoms, insomnia, diminished memory

and concentration³. Nutraceuticals are marketed in concentrated forms as pills, capsules, powders and tinctures either as a single substance or as combination preparations⁴.

Categories of Nutraceuticals

Nutraceuticals are biological therapies used to promote wellness, prevent malignant processes and control symptoms. These can be grouped into the following three broad categories⁵:

1. Substances with established nutritional functions, such as vitamins, minerals, amino acids and fatty acids - Nutrients
2. Herbs as concentrates and extracts - Herbals
3. Reagents derived from other sources (e.g. pyruvate, chondroitin sulphate, steroid hormone precursors) weight-loss supplements and meal replacements - Dietary supplements.

1. Nutrients:

The most commonly known nutrients are antioxidant, water and fat-soluble vitamins. Many potential benefits have been attributed to antioxidant use in the form of dietary intake or supplementation⁶. Antioxidants are useful in the prevention of cancer and cerebrovascular disease⁷. Intake of vitamin E may prevent Parkinson's disease.

2. Herbals:

Herbals are age old and they have storehouse of remedies to cure acute and chronic diseases. The knowledge of herbals has accumulated over thousands of years and helped in many effective means of ensuring health care.

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Numerous nutraceuticals are present in medicinal herbs.

Herbal extracts, like b-sitosterols (Saw Palmetto berry), cernilton (pollen extract), and pygeum africanum (African plum) have been evaluated for use in the treatment of benign prostatic hyperplasia⁸. Echinacea for the prevention and treatment of colds and flu. St John's wort is efficacious for mild to moderate depression. Echinacea may be helpful in the treatment or prevention of upper respiratory tract infections.

3. Dietary supplements:

Dietary supplements have been developed to manage diseases. Ketogenic diets, comprising of foods high in fat and low in protein and carbohydrate content, have been reported to improve seizure control. Cereals and grains is an area of nutraceuticals in which calcium fortification is strongly present. Researchers have found that minimally refined grains may reduce the incidence of diabetes⁹. Phytoestrogens increase oestrogens levels when hormonal levels are low. This action may prevent against both hot flushes and breast cancer. Lentinus (shiitake), Pleurotus (oyster), Auricularia (mu-er), Flammulina (enokitake), Tremella (yin-er), Hericium, and Grifola (maitake) have immunomodulatory effects, lipid lowering, antitumor and other beneficial or therapeutic health effects without any significant toxicity¹⁰. The two nutraceuticals namely glucosamine sulfate and chondroitin sulfate are effective and safer to alleviate symptoms of osteoarthritis which are abundantly being used today¹¹

Dairy foods are an emerging area of nutraceuticals containing probiotic bacteria which promotes gut health. Yoghurts containing

Lactobacillus are found in products such as Yakult are a fast developing area of functional foods. Because of all these findings, nutraceuticals are being widely accepted as an alternative to conventional therapy for enhancing the well being.

The present study devoted towards understanding of the nutraceuticals based on their pharmaceutical and therapeutic indications. There is a lot of confusion related to the terminology of nutraceuticals such as phytochemicals, pharmafoods, medical foods, functional foods, dietary supplements, designer foods, etc., There is thin dividing line in the usage by different people on different occasions. Pharmaceuticals are medications used to treat diseases, whereas nutraceuticals are the substances considered to prevent diseases¹¹. Pharmaceuticals and nutraceuticals both can cure and prevent disease(s) but, only pharmaceuticals have governmental sanction¹². The number of nutraceuticals is changing continuously which means there is an increase in ongoing market development, research, and consumer interest. This increase in interest in the nutraceutical consumption, forces the need to warrant the nutraceuticals usage safe and effective.

The mechanism of action of these nutraceuticals is not very clear. Mostly they are thought to be involved in a wide variety of biological processes like activation of signal transduction pathways, antioxidant properties, gene expression, cell proliferation and differentiation.

Conclusion

Nutraceuticals are definitely going to play an important role in future therapeutic developments but their success

will be has to be governed by control of purity, safety and efficacy without changing the innovation. Nutraceuticals will continue to play a promising role since they are convenient for today's lifestyle. Some genuinely researched nutraceuticals offer novel ingredients that bring about health benefits faster than would normally by eating conventionally healthy foods. The present knowledge about nutraceuticals is undoubtedly a biggest challenge for nutritionists, physicians, food technologists and food chemists. Public health authorities are considering the prevention and treatment with nutraceuticals as an upcoming instrument for maintaining health and against nutritionally induced acute and chronic diseases, which would help in promoting optimal health and quality of life. An important place for nutraceuticals in clinical practice is emerging, but important pharmaceutical and clinical issues need to be addressed by further research.

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