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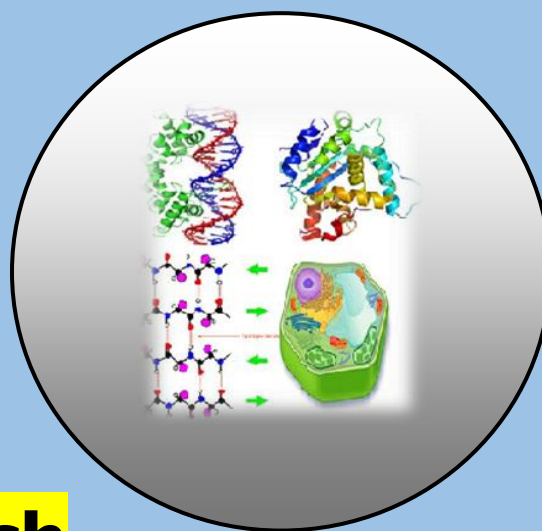
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Nutraceuticals and Their Importance in Health Promotion: A Review

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ABSTRACT

Nutraceuticals like prebiotics promote the functioning of probiotics and they reach colon in intact form. Example is non-digestible fibers like Inulin. Dietary fibers are either soluble or insoluble fibers. Soluble fibers are fermented in the colon and act as prebiotic. Insoluble fibers provide bulking and help in easy defecation. Omega 3 fatty acids are polyunsaturated fatty acids found in fish oil, egg oil etc. help in normal metabolism. Antioxidants found in many fruits and vegetables prevent and delay cell damages by reactive oxygen species and prevents occurrence of many diseases and ageing.

Keywords: Digestion, Metabolism, Health promotion and Nutraceuticals.

INTRODUCTION

The change of life style, quality and habit of food styles have increased the chance of disease. Intake of medicines to combat the disease problems has made life sophisticated. As prevention is better than cure Nutraceuticals can play an important role in controlling them. The term Nutraceutical given by Dr. Defelice means the products isolated or purified from foods and sold in medicinal forms having a physiological benefit or providing protection against diseases (De Defelice L Stephen, 1995). Nutraceutical is a combination of two terms "Nutrition" and "Pharmaceuticals" available in many forms and benefits in the health improvements avoiding intake of traditional medicines with side effects.

Nutraceuticals	Disease conditions
Antioxidants	Parkinson's disease, Alzheimer's disease, Huntington's disease (Chintalal <i>et al.</i> , 2013).
Phosphatidylserine	Mental health and age related mental disorders (Hager <i>et al.</i> , 2001).
Glucosamine and Chondroitin	Help in repairing and formation of cartilage and hence treats Osteoarthritis conditions (Jonathan Cluett, 2010).
Conjugated linoleic acid, Capsaicin, <i>Momordica Charantia</i> and Psyllium fiber	Treats Obesity (Kasbia, 2005).
Black and Green Tea, Soy and Fish oil	Heart diseases like Chronic heart disease (Lockwood Brain, 2007).
<ol style="list-style-type: none"> 1. Docosahexaenoic acid 2. Lipoic acid 	<ol style="list-style-type: none"> 1. In Neurovisual development and Gestational diabetes (Thomas <i>et al.</i>, 2006). 2. Treatment and prophylaxis of diabetic neuropathy and other complications (Coleman <i>et al.</i>, 2001).
Blueberry, Green tea, Catechin, Carnosine and Vitamin D	Proliferation of human haematopoietic progenitor cells and hence in stem cell therapy (Bickford <i>et al.</i> , 2006).
Carotenoids, Flavonoids and Stilbenes	Induce apoptosis and prevents cancerous conditions (Alexander and Kuang, 2004).
Tea, Soy isoflavones, Glucosamine, Melatonin etc.	Helps in improvement of skin conditions (Lockwood Brain, 2007).

Synonyms of Nutraceuticals

There are many terms can be used alternatively with nutraceuticals. They are Functional foods, Dietary supplements, Pharmaceuticals etc. Functional foods are designed foods close to natural foods. They are prepared in a process called as Nutrification. Here the foods are fortified with some additional substances like vitamins, minerals, carbohydrates, fats etc. they don't have therapeutic value but may have some physiological value. Example is milk fortified with Vitamin D. Dietary supplements are nutrients derived from food products intended to supplement the diet. They can be ingested in form of pills, tablets or liquids form. Examples are hormones, antibiotics etc. Pharmaceuticals are the medically valuable compounds obtained from modified agricultural crops or animals by using biotechnology. Example is monoclonal antibodies.

Classification of Nutraceuticals

According to the promise they are of two types, Potential nutraceuticals and Established nutraceuticals. The potential ones held promise of a particular health or medical benefits.

The potential one becomes established when sufficient clinical data demonstrates such a benefit (Pandey *et al.*, 2010). The food products included in Nutraceuticals are Probiotics, Prebiotics, Dietary fibers, Omega 3 fatty acids and Antioxidants (Kokate *et al.*, 2002). Probiotics are living microorganisms given with or without food which increase the intestinal microbial functions. Example is *Lactobacillus* containing preparations like curd, yoghurt etc.

Properties of nutraceuticals and its effect on the host

Nutraceuticals act as biological response modifiers which stimulate the immune system. They can be administered in the form of drugs or nutrients. Probiotics are organisms or substances that improve the intestinal microbial balance of a host animal. Prebiotics are indigestible components in a diet that are metabolized by specific microorganisms and prove helpful for the growth and health of the host. When provided as dietary supplements in feeds, even in small quantities, immunostimulants, probiotics, and prebiotics usually improve immunity, feed efficiency, and growth performance of the host (Ganguly *et al.*, 2010; 2013).

Prebiotics have the property to enhance many host biological responses and reduce the incidences of diseases by pathogenic microorganisms. By increasing the production of volatile fatty acids (VFAs) in the gastrointestinal (GI) tract, hosts are benefited by recovering some of the lost energy from indigestible dietary constituents and by inhibiting potential pathogenic bacteria. The VFAs produced are also indicative of the microbial population present in the GI tract (Ganguly, 2013a, b; Ganguly *et al.*, 2013).

Nutraceuticals and their association with disease

As Nutraceutical is combination of two words, Nutrition and Pharmaceuticals, it promotes health condition as well as prevents and treats many diseases. They are used in treatment of many diseases as re in the represented in the **Table**.

CONCLUSION

Supplementation of feed with dietary nutraceuticals can enhance the immune system of the host by providing increased resistance to infections. This, in turn, can promote gut development and nutrient absorption, leading to better performance of the host individual. Nutraceuticals are the preparations different from traditional medicinal treatments with lesser side effects and easy to administer. They help in promotion of health and prevention of many diseases. Increasing their research and development and marketing facilities can improve the health conditions and hence in economic condition of a nation.

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