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Importance of Nutraceuticals in Current Lifestyle

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ABSTRACT

The concept of nutraceutical was stared from the survey in U.K., Germany and France which concluded that diet is rated more highly by consumers than exercise or hereditary factors for achieving good health. Nutraceuticals are the pharmaceutically blended products that possess both nutritional as well as the medicinal value. Such a product is designed to improve the physical health, fight against day-to-day challenges such as stress, increase longevity, etc. Nutraceuticals have received considerable interest because of their presumed safety. In whole, nutraceutical has led to the new era of medicine and health, in which the food industry has become a research-oriented sector. Nutraceutical has advantage over the medicine because they avoid side effect, have naturally dietary supplement, etc. Nutraceutical on the basis of their natural source, chemical grouping, categories into three key terms: nutrients, herbals, dietary supplements, etc. The most rapidly growing segments of the industry were dietary supplements and natural/herbal products. The nutraceutical revolution will lead us into a new era of medicine and health, in which the food industry will become research oriented one similar to the pharmaceutical industry. The Present article focuses on the basic information about the nutraceuticals, its importance with the recent developments in nutraceutical research.

KEYWORDS: Nutraceutical, Dietary supplements, Food supplements, Functional foods.

INTRODUCTION:

The quality of life in terms of income, spending and lifestyle has improved with economic development. However, it has also thrown up a major challenge in the form of `lifestyle diseases. Nutraceuticals is a term derived from “nutrition” and “pharmaceutics” which was coined in 1989 by Stephen L. Defelice, founder and chairman of the Foundation of Innovation Medicine, originally defined as a food (or part of the food) that provides medical or health benefits, including the prevention and/or treatment of a disease The term is applied to products that are isolated from herbal products, dietary supplements (nutrients), specific diets, and processed foods such as cereals, soups, and beverages that other than nutrition are also used as medicine. Nutraceuticals may be used to improve health, delay the aging process, prevent chronic diseases, increase life expectancy, or support the structure or function of the body. Nowadays, nutraceuticals have received considerable interest due to potential nutritional, safety and therapeutic effects. Recent studies have shown promising results for these compounds in various complications.

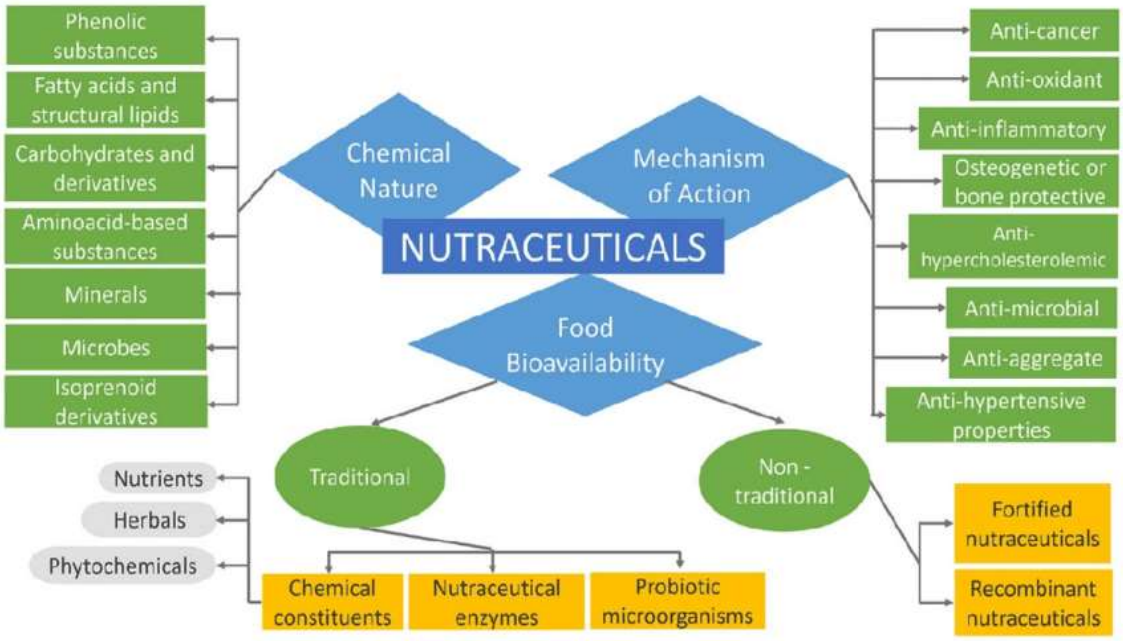

Figure 1: Broad Spectrum of Nutraceuticals

The objectives for shift towards nutraceuticals are:

1. Escalate numbers of consumers, concerned about healthcare costs.
2. Malcontent with pharmaceutical agents in promoting health, are turning to nutraceuticals to ameliorate their health and prevent chronic disease.
3. Health care provider recognize the fact that our heavily processed food supply, coming from crops grown with chemical fertilizers, pesticides, herbicides, and often genetically modified seeds, lacks sufficient nutrients necessary for optimum Health.
4. People believing more in prevention than a cure.
5. People who have chronic diseases and have found no solution in allopathic medicines.
6. Economically challenged patients.

Tide over between food and medicine:

Nutraceuticals are foods or food ingredients that provide medical or health benefits. This emerging class of products blurs the line between food and drugs. They do not easily fall into the legal categories of food or drug and often inhabit a grey area between the two. If, however, it can be shown to have a modifying effect on one or more of the body's physiological processes, it is likely to be considered to be a medicinal substance, so nutraceutical can be defined as a medicine for two reasons:

1. It can used for the prevention, treatment or cure of a condition or disease
2. It can be administered with a view to restoring, correcting or modifying physiological functions in human beings.

CATEGORIZATION OF NUTRACEUTICALS

Nutraceuticals are non-specific biological therapies used to promote wellness, prevent malignant processes and control symptoms. These can be grouped into the following categories:

1. **Nutrient:** A feed constituent in a form and at a level that will help support the life of an animal. The chief classes of feed nutrients are proteins, fats, carbohydrates, minerals and vitamins.
2. **Dietary Supplement:** A product that contains one or more of the following dietary ingredients: vitamin, mineral, herb or other botanical, amino acid (protein) and also includes the diet as concentrates, constituents, extracts or metabolites of these compounds.

3. **Nutraceutical:** Any nontoxic food component that has scientifically proven health benefits, including disease treatment and prevention.

4. **Herbals:** Herbs or botanical products as concentrates and extracts. Herbals are as old as human civilization and they provide a complete storehouse of remedies to cure acute and chronic diseases. India has the oldest written tradition for the nature's remedies called 'Ayurveda' which possess many effective means of ensuring health care.

5. **Probiotic Microorganisms:** They act to crowd out pathogens, such as yeasts, other bacteria and viruses that may otherwise cause disease and develop a mutually advantageous symbiosis with the human gastrointestinal tract. In the selection benchmarks for probiotics, one should consider safety, functional and technological aspects as follows Show a potential health benefit.

a) Probiotics should have human origin.

b) Commonly gram-positive organism.

c) Can survival after passage through acid and bile.

d) Can adherence to the human intestinal cells and grow in the gut.

e) Can show antagonist action against pathogenic or carcinogenic bacteria.

f) Clinically proven documented beneficial health effects.

6. **Nutraceutical Enzymes:** Enzymes are an essential part of life, without which our bodies would cease to function. Those people who are suffering from medical conditions such as hypoglycaemia, blood sugar disorders, digestive problems and obesity, eliminate the symptoms by enzyme supplements to their diet. These enzymes are derived from microbial, plant and animal sources.

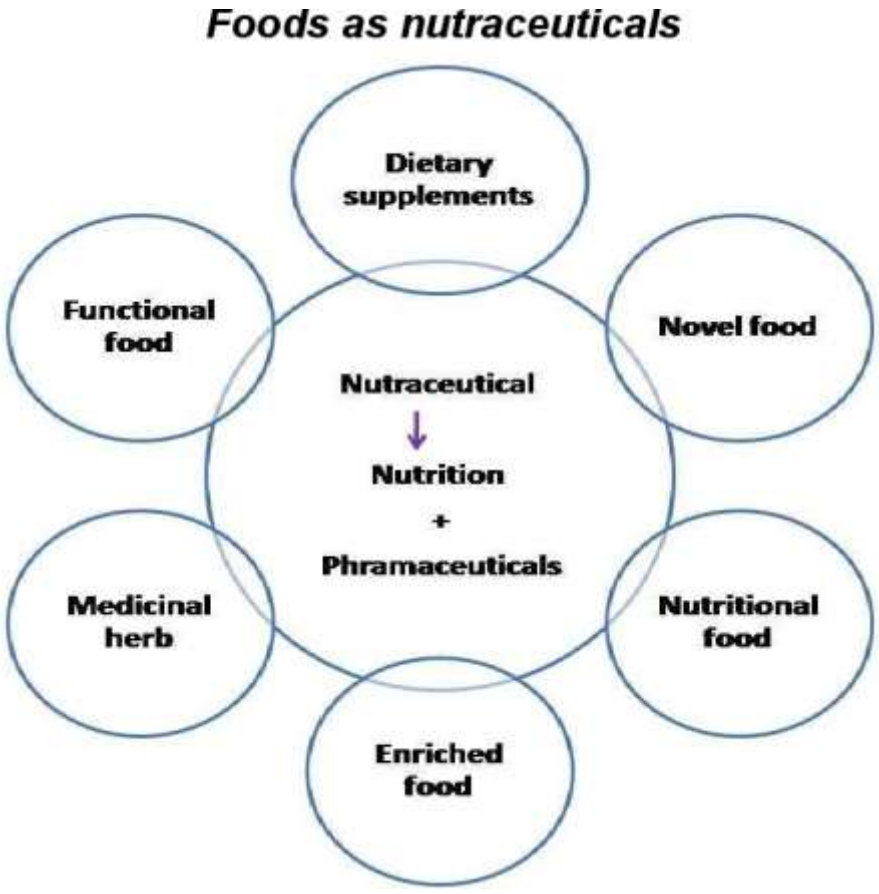

Figure 2

ALLURING PROPERTIES OF NUTRACEUTICALS

a) Many diets are rich in phenolics component and are daily consumed by human beings.

b) They rarely have any side effects.

c) They have relatively long half-life

d) They can be easily absorbed in the intestine after ingestion.

e) They do not require on appointment with a health care provider and are easily available without prescription.

f) Many people believe this approach is more natural than using prescription drug. They feel dietary supplements will help them feel stronger and healthier, give them more energy and prevent illness

ABSTRACTION OF NUTRACEUTICALS

1. **Potential nutraceuticals**
2. **Established nutraceuticals**

A potential nutraceutical is one that holds a promise of a particular health or medical benefit; such a potential nutraceutical only becomes an established one after there are sufficient clinical data to demonstrate such a benefit. It is disappointing to note that the overwhelming majority of nutraceutical products are in the 'potential' category, waiting to become established.

NUTRACEUTICAL GROWTH

In the global marketplace nutraceuticals and functional foods have become a multi-billion-dollar industry and estimates. Internationally, significant limitations to growth in this area are resulting from a necessity to properly label and assess the health effects of nutraceutical and functional foods. Selection for consistent production of high and low productivity of active plant components within specific ecological regions will allow development of alternative nutraceuticals and functional foods The United States of America (USA) currently possesses the largest and most rapidly expanding functional food and nutraceutical market in the world. India is the home of a large number of medicinal herbs, spices and tree species that have a substantially large domestic market. The functional foods and nutraceuticals are available as traditional Indian Ayurvedic Medicines in India and marketed in different brand names. However, no strict pharmaceutical regulations are available for the Ayurvedic and nutraceutical health products in India; they are available to the public as over the counter without any medical prescription. India has a large share of the international functional food and nutraceutical market, and exports products to various countries.

AREA COVERED BY NUTRACEUTICAL PRODUCTS

All therapeutic areas such as anti-arthritic, pain killers, cold and cough, sleeping disorders, digestion and prevention of certain cancers, osteoporosis, blood pressure, cholesterol, depression and diabetes have been covered by nutraceuticals.

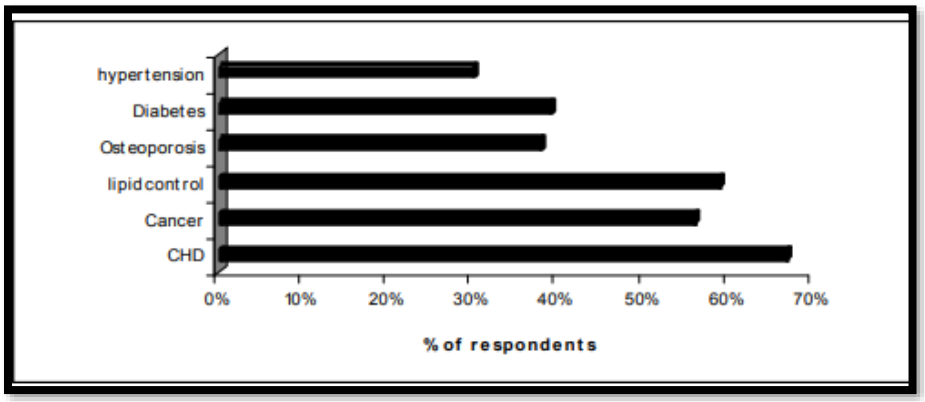

Figure 3. Percentage area covered by nutraceutical products

SAFETY AND EFFICACY

In nutraceutical products some substances due to direct toxic effects it may cause some problems. Safety of a nutraceutical product is often easier to establish than efficacy. Many nutraceuticals' products have been used as alternatives for both nutrition and medicine. Many manufactures make illegal claims without proper data to support their products safety and efficacy. As such, consumers need assurance that a product is safe and hopefully able to do what it says it does. Above anything else, nutraceuticals should be safe.

LABELING AND CLAIMS IN NUTRACEUTICALS

Labelling, and strict control over formulations and branding are still not required for most products. Health claims on nutraceuticals serve to alert consumers as part of an overall healthy diet, which may reduce the risk of certain diseases. The FDA initially authorized seven health claims in 1993 as part of the 1990 Nutrition Labelling and Education Act (NLEA). Since 1993, the FDA has authorized six more claims. In an effort to accelerate this information to consumers, the Food and Drug Administration Modernization Act of 1997 included a provision intended to speed up the process that establishes the scientific basis for health claims. Although food manufacturers may use health claims to market their products, leads to benefit consumers by providing information on healthful eating patterns that may help reduce the risk of heart disease, cancer, osteoporosis, high blood pressure, dental cavities, or certain birth defects. Health claims are different from structure/function claims, which also may appear on conventional food or dietary supplement labels. Unlike health claims, structure/function claims don't deal with disease-risk reduction. Also, the FDA does not pre-approve or authorize structure/function claims. Rather, when the manufacturer uses a structure/function claim, the company is responsible for making sure the claim is truthful and not misleading.

INDIAN REGULATORY ASPECTS OF NUTRACEUTICALS

The regulatory framework of nutraceuticals in India needs attention from the relevant authorities. Globally, the regulatory authorities are aware of changing needs of consumers and proactively protect consumers by amending existing laws to accommodate changes but in India old laws such as Prevention of Food adulteration Act, 1954, which regulates packaged foods, still exist for manufacturers. In addition, they need to tolerate by many other cumbersome laws such as:

1. Standards of Weights and Measures Act, 1976, and the Standards of Weights and Measures
2. (Packaged Commodities) Rules, 1977 (SWMA)
3. Infant Milk Substitutes, Feeding bottles and infant foods (regulation of production, Supply and Distribution) Act, 1992 with Rules, 1993 (IMS)
4. Edible Oils Packaging (Regulations) Order,1998 Fruit Products Order 1955 (FPO)
5. Meat product Order 1973
6. Milk and Milk Products Order 1992
7. Vegetable Oils Products (Regulation) Order 1998 (VOP)
8. Atomic Energy Act, 1962 and Atomic Energy (Control or irradiation of Food) Rules 1996
9. Consumer Protection Act 1986 and the Consumer Protection (Amendment) Act, 2002 and Rules 1987
10. Environment Protection Act, 1986 and Rules 1986
11. Agricultural Produce (Grading and Marking) Act, 1937 (as amended up to 1986) and 49
12. General Grading and Marking Rules 1986 and 1988 (AG Mark)
13. Bureau of Indian Standards (BIS) Act 1986

THE FUTURE OF NUTRACEUTICALS

Increasing awareness levels about fitness and health, spurred by media coverage are prompting the majority of people to lead healthier lifestyles, exercise more, and eat healthy. The expanding nutraceutical market indicates that end users are seeking minimally processed food with extra nutritional benefits and organoleptic value. This development, in turn, is propelling expansion in the nutraceutical markets globally. The emerging

nutraceuticals industry seems destined to occupy the landscape in the new millennium. Its tremendous growth has implications for the food, pharmaceutical, healthcare, and agricultural industries.

CONCLUSION

The nutraceutical industry is growing at a rate far exceeding expansion in the food and pharmaceutical industries. In tomorrow's market, the most successful nutraceutical players are likely to be those companies in which functional product are just a part of a broad line of goods satisfying both conventional and health value point. Future demand of nutraceutical depends on consumer perception of the relationship between diet and disease. Although nutraceuticals have significant promise in the promotion of human health and disease prevention, health professional, nutritionists and regulatory toxicologist should strategically work together to plan appropriate regulation to provide the ultimate health and therapeutic benefit to mankind. Long-term clinical studies are required to scientifically validate the nutraceuticals in various medical conditions. The interaction of nutraceuticals with food and drugs is another area, which should be taken into consideration. The effect of different processing methods on the biological availability and effectiveness of nutraceuticals remains to be determined. As like drugs, there should be strict regulatory controls for nutraceuticals.

REFERENCES

1. A. Bach, I. Guasch, G. Elcoso et al., "Changes in gene expression in the rumen and colon epithelia during the dry period through lactation of dairy cows and effects of live yeast supplementation," Journal of Dairy Science, vol. 101, no. 3, pp. 2631–2640, 2018.
2. A. Fabiani, C. Morosetti, A. Filosa et al., "Effect on prostatic specific antigen by a short time treatment with a Curcuma extract: a real-life experience and implications for prostate biopsy," Archivio Italiano di Urologia e Andrologia, vol. 90, no. 2, pp. 107–111, 2018.
3. E. Sangiovanni, S. Piazza, U. Vrhovsek et al., "A bio-guided approach for the development of a chestnut-based proanthocyanidin-enriched nutraceutical with potential anti-gastritis properties," Pharmacological Research, vol. 134, pp. 145–155, 2018
4. S. Manfredi, F. Di Ianni, N. Di Girolamo et al., "Effect of a commercially available fish-based dog food enriched with nutraceuticals on hip and elbow dysplasia in growing Labrador retrievers," Canadian Journal of Veterinary Research, vol. 82, no. 2, pp. 154–158, 2018.
5. C. Bergamini, N. Moruzzi, F. Volta et al., "Role of mitochondrial complex I and protective effect of CoQ10 supplementation in propofol induced cytotoxicity," Journal of Bioenergetics and Bio membranes, vol. 48, no. 4, pp. 413–423, 2016
6. D. A. Baidal, C. Ricordi, M. Garcia-Contreras, A. Sonnino, and A. Fabbri, "Combination high-dose omega-3 fatty acids and high-dose cholecalciferol in new onset type 1 diabetes: a potential role in preservation of beta-cell mass," European Review for Medical and Pharmacological Sciences, vol. 20, no. 15, pp. 3313–3318, 2016.
7. C. H. Chen, C. Fabian, S. Hursting, L. A. Degraffenried, and L. A. deGraffenried, "Breast cancer genetic and molecular subtype impacts response to omega-3 fatty acid ethyl esters," Nutrition and Cancer, vol. 68, no. 6, pp. 1021–1033, 2016.
8. G. Fabbrocini, M. Bertona, O. Picazo, H. Pareja-Galeano, ´ G. Monfrecola, and E. Emanuele, "Supplementation with Lactobacillus rhamnosus SP1 normalises skin expression of genes implicated in insulin signalling and improves adult acne," Beneficial Microbes, vol. 7, no. 5, pp. 625–630, 2016.
9. T. Kobe, A. V. Witte, A. Schnelle et al., "Combined omega-3 ¨ fatty acids, aerobic exercise and cognitive stimulation prevents decline in gray matter volume of the frontal, parietal and cingulate cortex in patients with mild cognitive impairment," Neuroimage, vol. 131, pp. 226–238, 2016
10. R. Manfredini, A. De Giorgi, A. Storari, and F. Fabbian, "Pears and renal stones: possible weapon for prevention? A comprehensive narrative review," European Review for Medical and Pharmacological Sciences, vol. 20, no. 3, pp. 414–425, 2016.
11. Prevesh Kumar, Nirdesh Kumar and Tushar Omer, Nutraceuticals, critical supplement for building a healthy India, World Journal of Pharmacy and Pharmaceutical Sciences, 2016; 5(3): 579-594.
12. Nasri H, Sahinfard N, Rafieian M, Rafieian S, Shirzad M, Rafieian, kopaei M. Effects of Allium sativum on liver enzymes and atherosclerotic risk factors. J HerbMed.
13. C. Manzo, A. Castagna, E. Palummeri et al., "Relationship between 25-hydroxy vitamin D and cognitive status in older adults: the COGNIDAGE study," Recenti Progressi in Medicina, vol. 107, no. 2, pp. 75–83, 2016.

14. E. Profumo, B. Buttari, D. D'arcangelo et al., "e Nutraceutical dehydrozingerone and its dimer counteract inflammation- and oxidative stress-induced dysfunction of in vitro cultured human endothelial cells: a novel perspective for the prevention and therapy of atherosclerosis," Oxidative Medicine and Cellular Longevity, vol. 2016, Article ID 1246485, 12 pages, 2016.

15. A. Santamaria, A. Di Benedetto, E. Petrella et al., "Myoinositol may prevent gestational diabetes onset in overweight women: a randomized, controlled trial," 8e Journal of Maternal-Foetal & Neonatal Medicine, vol. 29, no. 14, pp. 2245–2247, 2016.