

**FUTURE TRENDS IN NUTRACEUTICALS- A REVIEW****Gadapa. Sri Divya<sup>1\*</sup>, K. Geetha<sup>1\*</sup>, V. UmaMaheswara Rao<sup>1</sup>**

CMR College of Pharmacy, Kandlakoya(V), Medchal road, Hyderabad-501401,A.P, India.

Article Received on  
08 Aug 2015,Revised on 28 Aug 2015,  
Accepted on 22 Sep 2015**\*Correspondence for  
Author****Gadapa. Sri Divya**CMR College of Pharmacy,  
Kandlakoya(V), Medchal  
road, Hyderabad-  
501401,A.P, India.**ABSTRACT**

Let food be the medicine and medicine be the food to predict the relationship between appropriate foods for health and their therapeutic benefits. Nowadays it's very difficult to find a home which is healthy and free of illness. Many times it is seen that each member of family is suffering from one or other disease. Foreseeing the consequences, Nutraceutical started research for their remedies. Nutraceuticals have proven health benefits and their consumption will keep diseases at bay and allow humans to maintain an overall good health. The expanding nutraceuticals 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

nutraceuticals markets globally. Thus, this review gives an idea about the current status and future trends in field of nutraceuticals which offers incredible dietary supplements.

**KEYWORDS:** Nutraceutical, Dietary Supplements, functional foods.**INTRODUCTION**

Nutraceutical, a term combining the words "Nutrition" and "Pharmaceutical", is a food or food product that provides health and medical benefits, including the prevention and treatment of disease. Such products may range from isolated nutrients, dietary supplements and specific diets to genetically engineered foods, herbal products, and processed foods such as cereals, soups, and beverages. With recent developments in cellular-level nutraceutical agents, researchers, and medical practitioners are developing templates for integrating and assessing information from clinical studies on complementary and alternative therapies into responsible medical practice.

The term nutraceutical was originally defined by Dr. Stephen L. DeFelice, founder and chairperson of the Foundation of Innovation Medicine (FIM), Crawford, New Jersey. Since the term was coined by Dr. DeFelice, its meaning has been modified by Health Canada which defines nutraceutical as: a product isolated or purified from foods, and generally sold in medicinal forms not usually associated with food and demonstrated to have a physiological benefit or provide protection against chronic disease. Dr Stephen DeFelice coined the term "Nutraceutical" from "Nutrition" and "Pharmaceutical" in 1989.<sup>[1]</sup>

The old proverb "an apple day keeps a doctor away" is now "a nutraceutical a day keeps the doctor away". The idea behind the mode of action of nutraceutical is to provide functional benefits by increasing the supply of natural building blocker in body, replacement of this building blocker can work in two ways like to reduce disease sings or to improve performance.<sup>[2]</sup>

The concept of nutraceuticals was started from the survey in UK, Germany and France which conclude or hereditary factors for achieving good health.<sup>[3,4]</sup> The nutraceutical industry is a dynamic, evolving industry that offers exciting opportunities to merge scientific discovery with growing consumer interest in health-enhancing foods. Nutraceuticals will continue to have great appeal because they are convenient for today's lifestyle. The greatest challenge still remains in the public policy and regulatory areas, which will encourage research and development of products that provide health benefits and permit truthful, non-misleading communications of these products while protecting public health and maintaining public confidence.

### **FOOD AS MEDICINE**

Considered a father of Western medicine, Hippocrates advocated the healing effects of food. The Indians, Egyptians, Chinese, and Sumerians are just a few civilizations that have provided evidence suggesting that foods can be effectively used as medicine to treat and prevent disease. Ayurveda, the 5,000 year old ancient Indian health science, have mentioned benefits of food for therapeutic purpose.<sup>[5]</sup> Documents hint that the medicinal benefits of food have been explored for thousands of years. Hippocrates, considered by some to be the father of Western medicine, said that people should "Let food be thy medicine."

### **DIETARY SUPPLEMENTS**

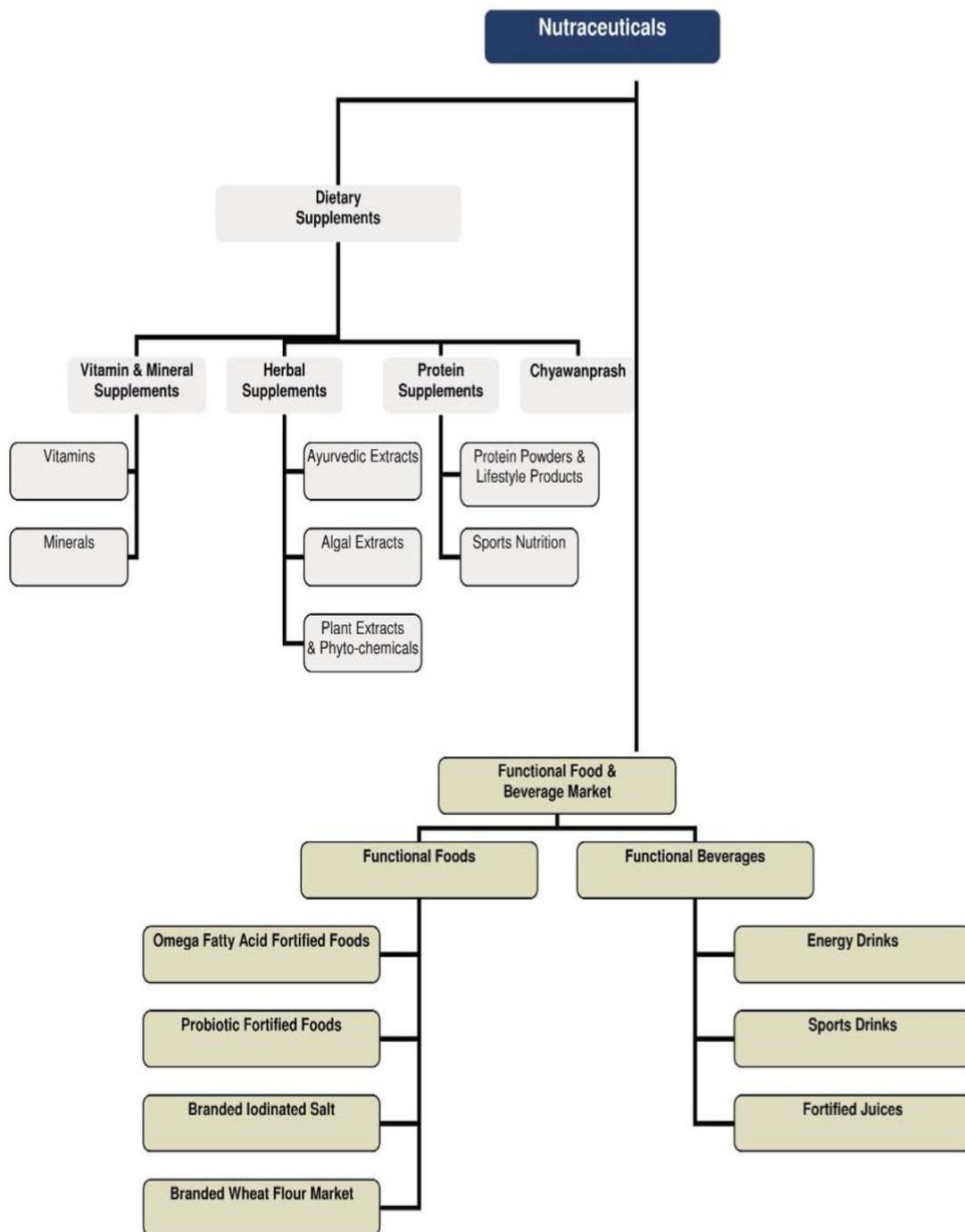
Dietary supplements, such as the vitamin B supplement show above, are typically sold in pill form. A dietary supplement is a product that contains nutrients derived from food products that are concentrated in liquid or capsule form. The Dietary Supplement Health and Education Act (DSHEA) of 1994 defined generally what constitutes a dietary supplement. “A dietary supplement is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet. The "dietary ingredients" in these products may include: vitamins, minerals, herbs or other botanicals, amino acids, and substances such as enzymes, organ tissues, glandulars, and metabolites.<sup>[6]</sup> Dietary supplements can also be extracts or concentrates, and may be found in many forms such as tablets, capsules, softgels, gelcaps, liquids, or powders.”

### **FUNCTIONAL FOODS**

Functional foods are designed to allow consumers to eat enriched foods close to their natural state, rather than by taking dietary supplements manufactured in liquid or capsule form. Functional foods have been either enriched or fortified, a process called nutrification. This practice restores the nutrient content in a food back to similar levels from before the food was processed. Sometimes, additional complementary nutrients are added, such as vitamin D to milk.

### **FARMACEUTICALS**

According to a report written for the United States Congress entitled "Agriculture: A Glossary of Terms, Programs, and Laws", “(Farmaceuticals) is a melding of the words farm and pharmaceuticals. It refers to medically valuable compounds produced from modified agricultural crops or animals (usually through biotechnology). Proponents believe that using crops and possibly even animals as pharmaceutical factories could be much more cost effective than conventional methods.<sup>[7]</sup>



**Fig no 1: Classification of Nutraceuticals**

## NUTRACEUTICALS REVOLUTION

The nutraceuticals revolution began in the early 1980s, sparked off when the actual or potential clinical benefits of calcium, fiber and fish oil were supported by clinical studies published in distinguished medical journals, and when physicians began to educate their colleagues and consumers about these substances via the mass media.<sup>[8]</sup>

**Factors effecting Revolution**

- Physician - Increased physician acceptance of the medical benefits of nutritional products increased market demand of nutraceuticals.
- Media- The mass media have emerged as the primary sources of medical claims, mass media has now become the powerful and legitimate promotion agency of nutraceutical products.<sup>[9]</sup>

**RESEARCH AND DEVELOPMENT**

The greatest scientific need in nutraceuticals pertains to standardization of compounds and/or products, to carefully develop and execute clinical studies/trials to provide the basis for health claims for nutraceuticals that impact consumers as well as companies making strategic investments.<sup>[10]</sup> Powerful market forces are fueling the interest in nutraceuticals<sup>[11]</sup>

- Rapid advances in scientific knowledge supporting the vital role of diet in health and disease prevention.
- Skyrocketing health care costs.
- An aging population.
- Technical advances in the food industry that are allowing the development of health promoting foods that can be marketed to health-conscious consumers at a premium.
- The changing regulatory environment.

**Role of R and D in nutraceutical**

- To test safety, purity and potency of products.
- To develop more effective and efficient means of producing ingredients for use in products.
- To develop testing methods for ensuring and verifying the consistency of the dosage of ingredients included in the company's products.
- Develop the new products either by combining existing ingredients used in nutritional supplements or identifying new ingredients that can be used in nutritional supplements.

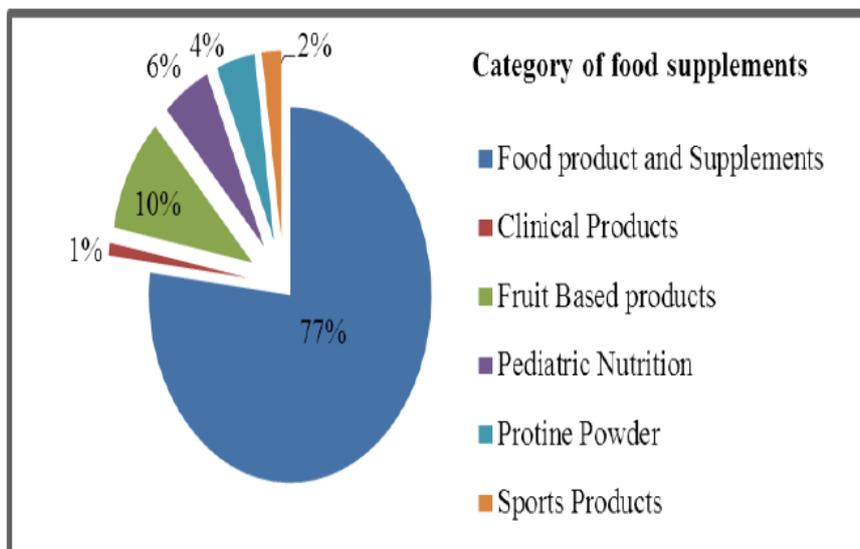
**MARKET TRENDS OF NUTRACEUTICALS**

The nutraceutical industry's three main segments include functional foods, dietary supplements, and herbal/natural products . Nutrition Business Journal (NBJ) identified an \$80 billion nutraceuticals market in 1995 by considering natural and organic foods (\$6.2 billion), functional foods (\$13.4 billion), certain lesser-evil foods with reduced or no unhealthy ingredients (\$23 billion), dietary supplements (\$8.9 billion), and selected market standard foods (\$28.3 billion). NBJ has begun tracking nutraceuticals industry growth. Since 1995, the

industry, as defined by NBJ, has grown by an average of 7.1 percent per year. In 1997, industry sales totaled \$91.7 billion (NBJ 1998). The most rapidly growing segments of the industry were dietary supplements (19.5 percent per year) and natural/herbal products (11.6 percent per year).<sup>[12]</sup> According to BCC Research - The global nutraceuticals market grew to \$46.7 billion in 2002, at an AAGR of nearly 7%. In 2007 nutraceuticals sale is projected to reach \$74.7 billion at an AAGR of 9.9%. This assumes a world economic recovery in 2003 and an end to price competition.

### INDIAN NUTRACEUTICAL MARKET

The nutraceutical market in India is growing at a compound annual growth rate (CAGR) of 18.46 per cent and is expected to be worth Rs 19,500 crore (US\$ 3 billion) by the end of 2013-14, as per a recent research report. Divided into three segments dietary supplements functional foods and functional beverages, the Indian nutraceutical market is witnessing a shift in consumer buying behaviour. Traditionally, Pharmadominated dietary supplement segment has been dominating the nutraceutical market but the changing consumer preferences has paved way for segments like functional food and functional beverages capturing a strong 67 per cent market share in India.<sup>[13, 14]</sup> It is interesting to note that the domestic nutraceutical market is mainly concentrated in southern region of the country, followed by the eastern region with leading top three states being Andhra Pradesh, TamilNadu, and West Bengal. The urban-centric nutraceutical market is gradually gaining ground in rural India with the rural market capturing almost 1/3rd of the total nutraceutical market in India. However, in terms of penetration, urban India still scores high at 22.51 per cent while it stands at 6.32 per cent in rural India. The Indian market current holds a 2per cent market share of the global nutraceutical market and is predictable to increase by manifold in the years to come.<sup>[14]</sup>



**Fig no 2: Category of food supplements.**

In India, market of nutraceutical over a broad spectrum of categories of food supplements which is shown in Fig no 2, which are approaching the higher degree of accuracy and growth through innovative approaches. A host of pharmaceutical and Fast Moving Consumer Goods (FMCG) companies are entering this market, other than Nutraceutical and Herbal/ Ayurvedic companies. Pharmaceutical companies consider nutraceuticals as an extension of the healthcare sector and lead the dietary supplement category. Meanwhile, FMCG companies are expanding by launching products in the functional food and beverage category. The domestic companies have a strong foothold with 55% of market share and international companies occupying 45%.<sup>[15]</sup>

In India, functional foods are predictable to see increased consumption over the next five years resulting in functional foods and beverages garnering greater product share in the market as opposed to dietary supplements. The total Indian nutraceuticals market in 2015 is expected to be roughly US \$ 5 billion.<sup>[16]</sup> On the supply side, India will maintain a modest trade surplus in Nutraceutical ingredients as most of the country's large pharmaceutical companies operate divisions that produce bulk medicinal and nutritional compounds. The distribution channels available for Nutraceutical shall play a vital role in the future growth of the business.<sup>[17, 18]</sup>

### **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.<sup>[19]</sup> Its tremendous growth has implications for the food, pharmaceutical, healthcare, and agricultural industries. Many scientists believe that enzymes represent another exciting frontier in nutraceuticals.

"Enzymes have been underemployed... they're going to be a hot area in the future." Fermentation technology using microbes to create new food products also represents potential. Global trends to healthy products cannot be reversed. Companies taking the lead by investing strategically in science, product development, marketing and consumer education will not go unrewarded.<sup>[20]</sup>

## 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 products are just a part of a broad line of goods satisfying both conventional and health value points. Future demand of nutraceuticals depends on consumer perception of the relationship between diet and disease.

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