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ROLE OF NUTRACEUTICALS IN HUMAN HEALTH CARE

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ABSTRACT
The terms "nutrition" and "pharmaceutical" are combined to form the term "nutritraceutical." In general, nutraceuticals are foods or dietary components that significantly contribute to regulating and preserving the regular physiological processes that keep people healthy. The present demographic and health trends are the main drivers of the global nutraceutical market's growth. Dietary fibre, probiotics, prebiotics, polyunsaturated fatty acids, antioxidants, and other herbal/natural food products can all be classified as nutraceuticals. These nutraceuticals aid in the fight against some of the century's biggest health issues, including diabetes, cholesterol, osteoporosis, cancer, cardiovascular disease, and obesity. Overall, "nutraceuticals" have ushered in a new era of health and medicine, where the food industry is now a research-focused field.
KEYWORDS: *Bioactive Chemicals, Therapeutic Foods, Nutraceuticals, Safety, Health, Regulation, Efficacy, Analysis, And Formulation*

1. INTRODUCTION

A "possible beneficial role" for health is indicated by the coordinated and integrated activity of biologically active chemicals and nutritional components. Numerous domains, particularly those related to nutraceuticals, are covered by the utilisation and applications of bioactive components [1,2,3].

Nutraceuticals are derived from either plant or animal sources, and current global research endeavours to thoroughly elucidate their mechanism of action, safety, and effectiveness by supporting their role with clinical data [4,5]. Clarifying their mechanism of action will actually pave the way for the development of a new generation of therapeutic agents that do not advertise themselves as a drug substitute but rather as a means of: (i) preventing a group of linked conditions (metabolic syndrome), such as heart disease, stroke, and type 2 diabetes; and (ii) enhancing pharmacological therapy, particularly for those who are not eligible for a traditional pharmacological therapy [6,7].

This Special Issue is devoted to the function and viewpoints of nutraceuticals in human health, evaluated from a variety of perspectives, from efficacy studies to clinical trials, from analytical aspects to positive effects on medical problems.

Regarding the investigation of functional ingredients and applications, Lu Martínez et al. [8] have examined and suggested the use of protein concentrate in emulsion stability and Prunus serotine defatted flour in cookies without the risk of hydrogen cyanide. The biological characteristics of polysaccharides as therapeutic agents were thoroughly researched and compiled by Ullah et al. [9]. The study of Swat et al. [10] on the characterisation of fulvic acid beverages that are sold worldwide is noteworthy. Lucarini et al. [11] looked into alternative useful substances made from grape seeds, which are waste or byproducts of commercial grape processing. There have been studies on the assessment of the positive effects of nutraceuticals in both in vitro [12] and in vivo [13] models, including animal studies on dietary supplementation [14,15,16].

Nutraceutical

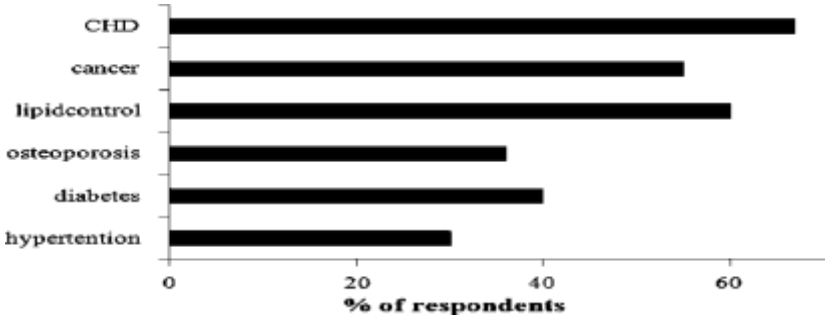
The term "nutraceutical" was first used in a survey conducted in the United Kingdom, Germany, and France. The consumers rated diet as the most important factor in achieving good health, followed by exercise or genetic factors (Pandey et al. 2010). Stephen De Felice, founder and chairman of the Foundation for Innovation in Medicine (FIM), Cranford, NJ, created the phrase "nutraceutical" in 1989 by combining the words "nutrition" and "pharmaceutical" (Maddi et al. 2007; Brower 1998).

A nutraceutical is "a food (or a portion of food) that provides medical or health benefits, including the prevention and/or treatment of a disease," according to De Felice. According to Wildman (2001) and Bull (2000), Health Canada defines a nutraceutical as "a product prepared from foods, but sold in the form of pills, or powder (potions), or in other medicinal forms, not usually associated with foods."

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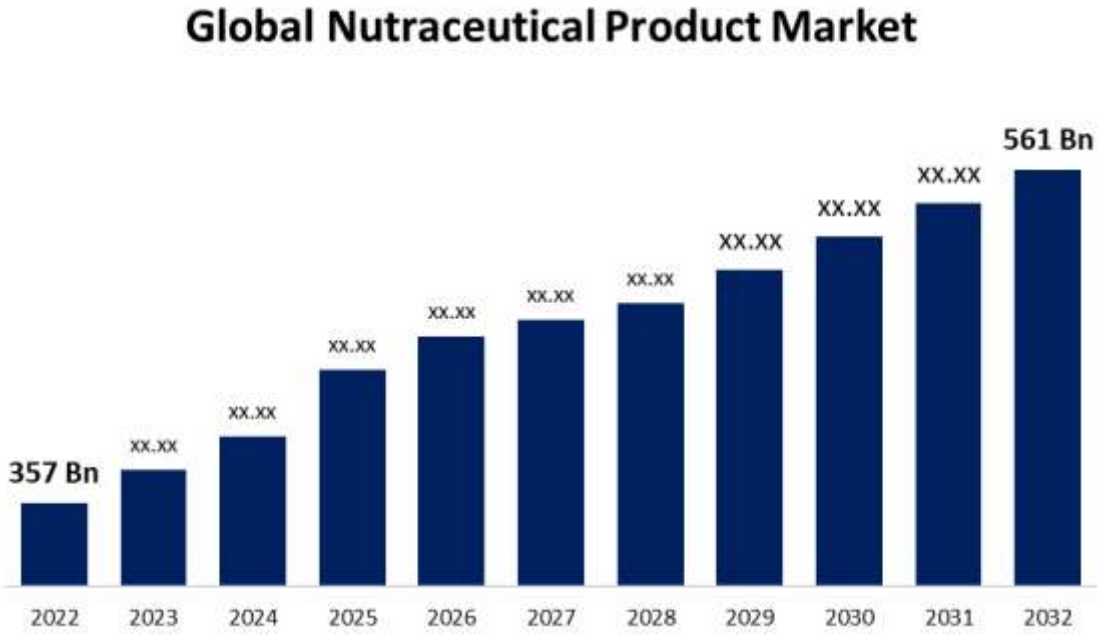
A diverse range of items originating from the food business, the herbal and dietary supplement sector, the pharmaceutical industry, and the recently combined.
nutrition, agricultural, and pharmaceutical conglomerates. From genetically modified "designer" meals and processed goods like cereals, soups, and drinks to isolated nutrients, herbal products, ietary supplements, and diets, it can take many forms (Malik 2008; Dureja et al. 2003).

The majority of therapeutic categories, including anti-arthritic, cold and cough, sleep problems, digestion, cancer prevention, osteoporosis, blood pressure, cholesterol management, pain relievers, depression, and diabetes, are covered by nutraceuticals (Fig. 1).



(Sami Labs 2002; Pandey et al. 2010)

The three primary sectors of the nutraceutical industry are dietary supplements, functional foods, and herbal/natural goods (Rishi 2006; Hathcock 2001). According to the Nutrition Business Journal (2006), the two categories with the fastest growth rates are dietary supplements and herbal/natural goods. The global market for nutraceuticals increased from $46.7 billion in 2002 to $74.7 billion in 2007 (BCC Research). The USA, UK, and Japan are the top three nations with nutraceutical markets (Fig. 2) (BCC Research).



This new nutraceutical field is in the height of its research and development. Standardization of nutraceutical chemicals or products, as well as the meticulous development and execution of clinical trials to support health claims that have an effect on both consumers and nutraceutical corporations, are the areas of highest scientific need.

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Categorizing Nutraceuticals

Nutraceuticals can be arranged in a variety of ways based on their easier comprehension and use, such as for dietary recommendations, clinical trial design, academic instruction, or the creation of functional foods. Classifying nutraceuticals according to their chemical makeup, mode of action, or food sources is one of the most popular approaches. The following categories apply to all natural food sources utilized as nutraceuticals (Kalia 2005; Kokate et al. 2002):

1. Dietary Fibre
2. Probiotics
3. Prebiotics
4. Polyunsaturated fatty acids
5. Antioxidant vitamins
6. Polyphenols
7. Spices

CONCLUSION

Humans' constantly shifting lifestyles frequently overload their antioxidant defence systems, leading to oxidative stress. Furthermore, as people age, their antioxidant defence mechanism levels noticeably decline. Numerous illnesses could arise as a result of them. As a result, research has mostly concentrated on various nutraceuticals throughout the last few decades. Products containing antioxidants can either specifically activate the body's defences or work naturally to scavenge free radicals (e.g., vitamins, PUFA). The possible benefits and drawbacks of nutraceuticals for healthy people are discussed in this review. However, genetic predisposition and lifestyle factors like smoking and excessive alcohol use are the main factors that determine an individual's susceptibility to any given disease. Thus, each person may react differently to nutraceuticals. Nutraceuticals have demonstrated health advantages, and when taken in accordance with recommended dietary intakes, they can prevent disease and help people maintain general health.

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