



## MEDICINE-FREE HEALTH: HOW NUTRACEUTICALS ENSURE EXTRAORDINARY WELL-BEING WITH MINIMAL DOCTOR INTERVENTION

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### Abstract

The Nutraceutical approach to general well-being and a balanced, healthy lifestyle is a holistic way of maintaining life. It acts as a connection between food and medicine for the human population. The development of various advanced sciences, such as Nanotechnology, Food Sciences, Nutritional sciences, and Dietary Sciences, has paved the way for a surplus of knowledge on living a balanced lifestyle with the support of dietary and health supplements. This paper discusses the classification of nutraceuticals, their mechanisms of action, benefits, limitations, and future potential in public health. A brief structured survey conducted among two groups, the General Category (n=100) and the Patient Category (n=100), showed an increased interest in holistic lifestyles, and patients also prefer nutraceutical products as a comfortable supplement for maintaining a healthy lifestyle. (Puri et al., 2022) (Golla, 2018) (Santini et al., 2016). This research paper has covered the importance of the health supplements and also the observation finds that the participants feel more comfortable with nutraceuticals.

**Keywords:** Nutraceuticals, Dietary supplements, Nutrients, Antioxidant activity

### Introduction

Nutraceuticals, a term coined by Stephen Defelice in the year 1989, refer to "Any substance that is a food or part of a food and provides medical or health benefits, including the prevention and treatment of disease". These nutraceuticals, including isolated nutrients, dietary supplements, specific diets, genetically engineered designer foods, and phytochemicals, are promising to have beneficial health effects beyond the traditional nutritional value found in food (Santini et al., 2016). There is a significant association between dietary habits and the determination of chronic diseases, such as cataract, cardiovascular diseases, diabetes, gallstones, inflammatory diseases, neurodegenerative diseases, obesity, and several types of cancers (Golla, 2018). Nutraceuticals have been used to improve health, increase life expectancy, delay the aging process, prevent chronic diseases, or support the structure and/or function of the body (Golla, 2018). The major benefits of nutraceuticals over pharmaceuticals include their natural origin, better safety profile, and reduced side effects (Golla, 2018). They can provide substantial health benefits, especially in the prevention and/or treatment of acute and chronic human diseases, thereby promoting optimal health, longevity, and quality of life.

### **Classification of Nutraceuticals**

Nutraceuticals can be broadly classified into the following categories (Golla, 2018):

1. **Nutrients:** These include vitamins, minerals, amino acids, and fatty acids that have additional health benefits beyond their basic nutritional roles. These nutraceutical nutrients can help maintain optimal bodily functions, support immune system health, and promote overall well-being (Golla, 2018).
2. **Dietary supplements:** This category encompasses herbs, botanicals, enzymes, and probiotics that are used to supplement the diet. These nutraceutical supplements can help fill nutritional gaps, support specific physiological processes, and enhance the overall nutritional profile of an individual's diet (Golla, 2018).
3. **Herbals:** This group consists of plants or plant parts that are utilized for their medicinal, therapeutic, or health-promoting properties. These nutraceutical herbal compounds can offer a range of benefits, from reducing inflammation to supporting cognitive function and immune responses (Golla, 2018).
4. **Dietary fiber:** These are the indigestible parts of plant foods that provide bulk, increase satiety, and promote digestive health. These nutraceutical fiber components can help maintain a healthy gut microbiome and support various aspects of gastrointestinal function (Golla, 2018).

The global market for nutraceuticals is estimated to be around USD 117 billion, and it is expected to grow significantly in the coming years due to the increasing awareness of the benefits of nutraceuticals among the general population (Golla, 2018).

### **Mechanisms of Action of Nutraceuticals**

Nutraceuticals can exert their health benefits through various mechanisms, including:

1. **Antioxidant activity:** Nutraceuticals can neutralize free radicals and reactive oxygen species, thereby reducing oxidative stress and preventing cellular damage. Many nutraceutical compounds, such as vitamins C and E, carotenoids, and polyphenols, possess potent antioxidant properties that can scavenge these harmful reactive species and protect cells from oxidative damage, which has been linked to the development of various chronic diseases.(Valadez-Vega et al., 2013)
2. **Anti-inflammatory activity:** Nutraceuticals can inhibit the production of inflammatory mediators, such as cytokines and prostaglandins, and reduce inflammation. Bioactive compounds found in nutraceuticals, including omega-3 fatty acids, curcumin, and resveratrol, have been shown to modulate pro-inflammatory signalling pathways, such as the NF- $\kappa$ B and MAPK cascades, leading to a decrease in the production of inflammatory molecules and a reduction in overall inflammatory response.(Yoshimura et al., 2003)
3. **Modulation of gene expression:** Nutraceuticals can influence the expression of genes involved in various cellular processes, such as cell growth, differentiation, and apoptosis. Some nutraceuticals have been observed to regulate the expression of genes related to cell cycle control, angiogenesis, and programmed cell death, which can have implications for the prevention and management of conditions like cancer.(Gupta et al., 2010)
4. **Improved gut microbiome:** Nutraceuticals, such as probiotics and prebiotics, can promote a healthy balance of gut microbiota, which is crucial for overall health and immune function. Probiotic supplements and prebiotic fibres have been shown to enhance the diversity and abundance of beneficial gut bacteria, leading to improved intestinal barrier function, reduced inflammation, and better nutrient absorption.(S, 2015)
5. **Regulation of metabolic pathways:** Certain nutraceuticals have the ability to modulate metabolic processes, such as glucose and lipid metabolism, which can help in the management of conditions like diabetes and cardiovascular diseases. For example, some nutraceuticals have been found to improve insulin sensitivity, enhance fatty acid oxidation, and regulate the expression of genes involved in energy homeostasis.(Samuel & Shulman, 2016)

## Benefits of Nutraceuticals

Nutraceuticals can provide a wide range of comprehensive health benefits, including:

- Prevention and management of chronic diseases, such as cardiovascular diseases, diabetes, and cancer. Nutraceuticals have shown potential in reducing the risk and slowing the progression of these prevalent chronic conditions by addressing underlying factors like inflammation, oxidative stress, and metabolic imbalances. For example, antioxidant-rich nutraceuticals can help to protect against the cellular damage and improve cardiovascular function, while anti-inflammatory compounds can aid in the management of conditions like diabetes and certain types of cancer. (Golla, 2018)
- Improvement of cognitive function and mental health. Certain nutraceuticals, such as omega-3 fatty acids, antioxidants, and herbal extracts, have demonstrated the ability to enhance brain health, improve memory, concentration, and mood, and alleviate symptoms of conditions like depression, anxiety, and age-related cognitive decline. (Pitt & Leung, 2016)
- Enhancement of the immune system and overall well-being. Nutraceuticals containing vitamins, minerals, probiotics, and other bioactive compounds can bolster the body's natural defenses, helping to prevent infections, reduce inflammation, and support the body's resilience and vitality, leading to improved general health and well-being. (Maggini et al., 2007)

## Survey Description

A structured survey was conducted to assess public and patient perspectives on the role of nutraceuticals in promoting health and well-being. The study aimed to evaluate the preference for nutraceuticals over conventional medications and their perceived benefits in managing health conditions. The survey targeted two distinct groups:

- **General Category (n=100):** Individuals without major health conditions who use nutraceuticals for preventive and wellness purposes.
- **Patient Category (n=100):** Individuals with diagnosed conditions who use nutraceuticals as complementary supplements alongside conventional treatments.

The survey collected data on various aspects, including demographics, health conditions, medication usage, frequency of nutraceutical intake, awareness sources, perceived benefits, and side effects. The findings provide insight into the increasing inclination towards a holistic lifestyle and the growing trust in nutraceuticals as a preferred choice for health maintenance.

## Data Availability

Ravikumar, Hemachandran ; Yuvaraj, Kokilabhuvaneswari (2025), "Analysed Survey Data-Medicine-Free Health: How Nutraceuticals Ensure Extraordinary Well-Being with Minimal Doctor Intervention", Mendeley Data, V2, doi: 10.17632/m92stzgyjc.2

## Results

The survey results were submitted by the participants of general enquiry form (n=100) and Patient enquiry form (n=100) with an average mean age of 37.89 years. Has revealed that 80% of the participants identified nutraceuticals as the best choice for maintaining health and managing existing health conditions. This strong preference highlights the increasing trust in natural and dietary supplements over pharmaceutical interventions. The findings indicate that both healthy individuals and patients are actively incorporating nutraceuticals into their daily routines due to their perceived benefits, such as improved immunity, enhanced digestion, better skin and hair health, and overall well-being.

## Key findings

- **A majority (80%)** prefer nutraceuticals over conventional medications.
- **Minimal reported side effects**, with most users experiencing positive health improvements.

- **Higher acceptance among younger demographics**, though older individuals are also adopting nutraceuticals.
- **Doctor's recommendation** remains a key influencer in consumer choices.

### **Discussion**

These results reveal to us that there is a growing interest among the people for the holistic and preventive healthcare mindset. The preference given by the participants in both forms is showing that the consumers are well aware of the importance of wellbeing, lifestyle, diet, nutrients and herbal remedies. On a general mindset of people with mythological ideas that pharmaceutical products may have side-effects and long term dependency but nutraceuticals products are more safe for human consumption with no or minimal side effects. The role of healthcare professionals is highly important in familiarity of the nutraceuticals. Also our survey indicated that the doctors recommendation and health care professionals advice has played a major role in making the choice by the consumers. This shift is clearly showing that the people are right now driven to the holistic approach rather than a pharmaceutical approach.

However with all these positive sides even this have some limitations:

- Reduced regulation for the standards of Nutraceuticals
- Quality of the product varies from brand to brand
- Reduced clinical trials compared to the pharmaceutical industry.

The future research must be encouraged in targeting more on clinical trials and human interventions. These survey findings are very clear that the people were very concerned about the health maintenance & general well being, marking a significant shift in how people approach their well-being.

### **Limitations and Challenges of Nutraceuticals**

Lack of Standardization and Quality Control, Potential Adverse Effects, Limited Scientific Evidence are the major drawbacks of the nutraceuticals and also the survey we made was limited to only N=200 people, this can be increased in the future for further development.

### **Author Contributions**

Dr Kokilabhuvaneswari designed the study; Dr. Hemachandran Ravikumar provided ideas on the final design and selection of assessment tools. Both authors were involved in the collection of data, summarising, statistical analysis and finalising the report. Dr. Hemachandran Ravikumar provided the initial draft of the manuscript, and the final version is made available by considerations of both.

### **Declarations of conflicts of interest**

The authors declare that they have no potential conflicts of interest concerning the study design, research analysis or publication of this article.

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### **Ethical Approval**

The study was approved by the Review and Ethics Committee of the UNS Research Council, India. All participants provided written informed consent about the trial.

### **Conclusion and Future Potential**

Nutraceuticals have the potential to play a significant role in promoting public health and reducing the burden of chronic diseases. The development of better-characterized and research-proven nutraceutical products, along with effective regulation and quality control, can enhance consumer confidence and contribute to their widespread adoption as a complementary approach to healthcare. The findings from the structured survey suggest that both the general population and patients are

increasingly interested in holistic approaches to health and wellness, with a growing preference for nutraceutical products as a comfortable supplement for maintaining a healthy lifestyle. Future research should focus on elucidating the detailed molecular mechanisms of action of nutraceuticals, conducting robust clinical trials, and developing innovative delivery systems to enhance their bioavailability and efficacy.

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