



Nutraceutical Including Comprehensive Study Of Nutraceutical Tablet

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ABSTRACT

- Nutraceuticals are the nourishing components (hybrid of nutrition and pharmaceuticals) that are biologically active and possess capability for maintaining optimal health and benefits.
- These products play a significant role in human health care and its endurance, most importantly for the future therapeutic development.
- Nutraceuticals are globally growing in the field of services such as health care promotion, reduction, etc.
- Nutraceuticals have been used not only for nutrition but also as a support therapy for the prevention and treatment of various diseases, such as to reduce side effects of cancer chemotherapy and radiotherapy.
- Diverse novel nanoformulation approaches tend to overcome challenges involved in formulation development of nutraceuticals.
- Nanotechnology also leads to the generation of micronized dietary products and other nutraceutical supplements with improved health benefits.
- Nutraceuticals have been used not only for nutrition but also as a support therapy for the prevention and treatment of various diseases, such as to reduce side effects of cancer chemotherapy and radiotherapy.
- In this review article, the latest key findings (clinical studies) on nutraceuticals that show the therapeutic action of nutraceutical's bioactive molecules on various diseases have also been discussed.
- **Keywords:** cardiovascular diseases, interactions, nutrition, prevention, therapeutics.{1}

INTRODUCTION

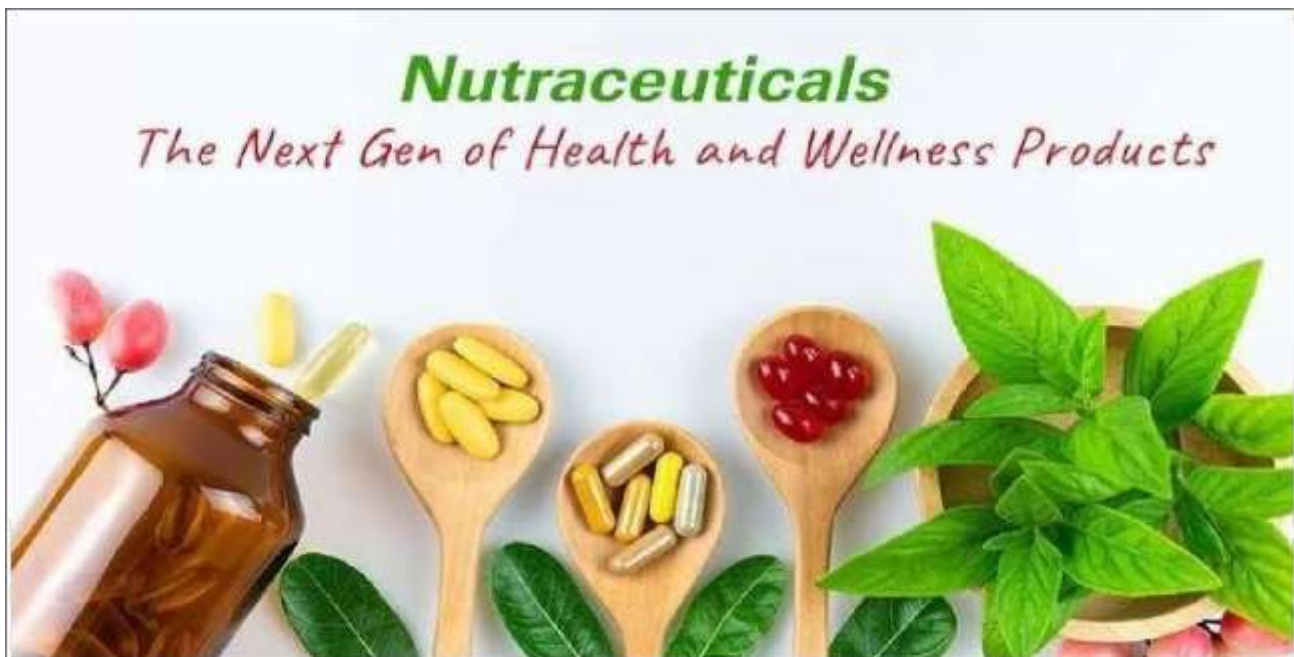


Figure.1 Nutraceutical

- The term “nutraceutical” combines the two words of “nutrient,” which is a nourishing food component, and “pharmaceutical,” which is a medical drug. {2}
- Nutraceuticals are food or food components that provide health benefits beyond basic nutrition {3}
- The products included in the nutraceutical field are generally substances derived from plants, foods, or microbial sources. {4}
- Nutraceutical, type of food substance that helps to maintain health and prevent illness.
- Nutraceutical is sometimes used interchangeably with the terms functional food and dietary supplement, though there are distinctions.
- Nutraceuticals, on the other hand, are products with biological functions that are derived only from foods.
- A wide range of products are marketed as nutraceuticals. These include vitamins and essential minerals, polyunsaturated and monounsaturated fatty acids, and a variety of herbal products (e.g., phytoestrogens) that have diverse claims of health-promoting properties.
- A key criticism of nutraceuticals is related to their potential use as a substitute for a healthy diet or lifestyle. {5}

HISTORY

- The term nutraceuticals were introduced in 1989 by American medical doctor Stephen L. DeFeli. He concept of Nutraceuticals went back as far as 3000 years ago.
- Hippocrates(460–377 B.C) stated let food be thy medicine and medicine be thy food'. In the early 1900s the United States of America.
- According to DE Felice, nutraceutical can be said to be —a food (or part of a food) that provides medical or health benefits, including the prevention and/or treatment of a disease.{6}
- In ancient Greece, Hippocrates (460-377 BCE), often referred to as the “Father of Medicine,” was among the first Western physicians to formally recognize the connection between diet and health.
- One of the most famous historical examples of a nutraceutical application comes from the 18th century when British naval surgeon James Lind discovered that citrus fruits could prevent and cure scurvy, a disease caused by vitamin C deficiency.
- In India, Ayurvedic medicine dating back to 5000 BCE used turmeric, ginger, and other spices not just as flavorings but as remedies for various ailments.
- Throughout the 1990s and 2000s, the global nutraceutical market expanded rapidly as consumers became increasingly interested in preventive healthcare and natural products. Traditional remedies from various cultures gained international popularity, and scientific research began to validate many traditional uses of functional foods.
- The late 20th and early 21st centuries have seen an explosion of scientific research into the efficacy of various nutraceuticals. Compounds like omega-3 fatty acids, polyphenols in tea and wine, glucosamine for joint health, and probiotics for gut health have been extensively studied for their potential benefits.{7}

HEALTH BENEFIT OF NUTRACEUTICALS

- Prevent and treat chronic disease.
- Improve function of immune system
- Reduce inflammation
- Boost gut health
- Slow down aging
- Enhance athletic performance
- Manage psychological function
- Support reproductive health{8}
- Stronger Immunity
- Better Heart Health
- Healthier Skin and Hair
- Sharper Brain and Focus

- Improved Digestion
- Higher Energy Levels{9}

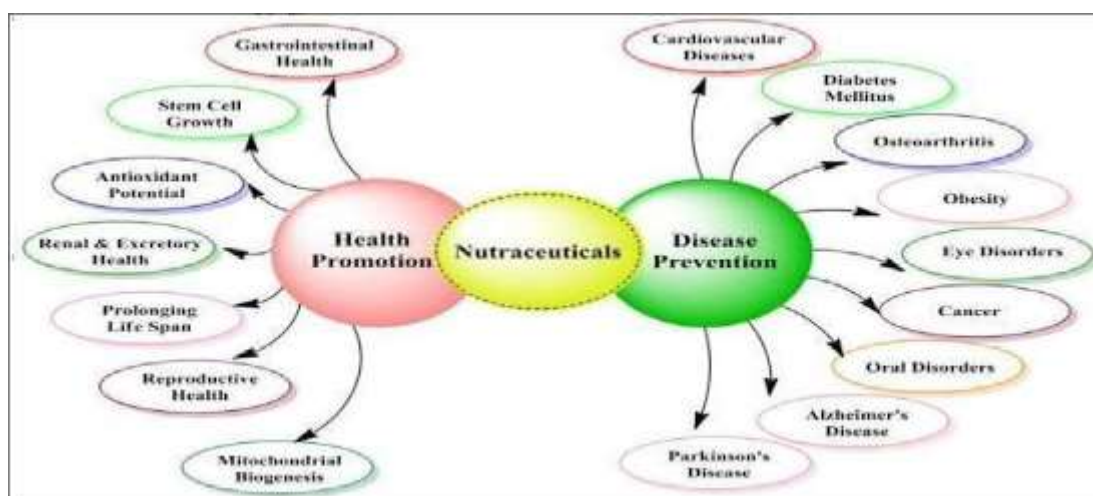


Figure 2. Nutraceuticals prevention and promotion

CLASSIFICATION OF NUTRACEUTICALS

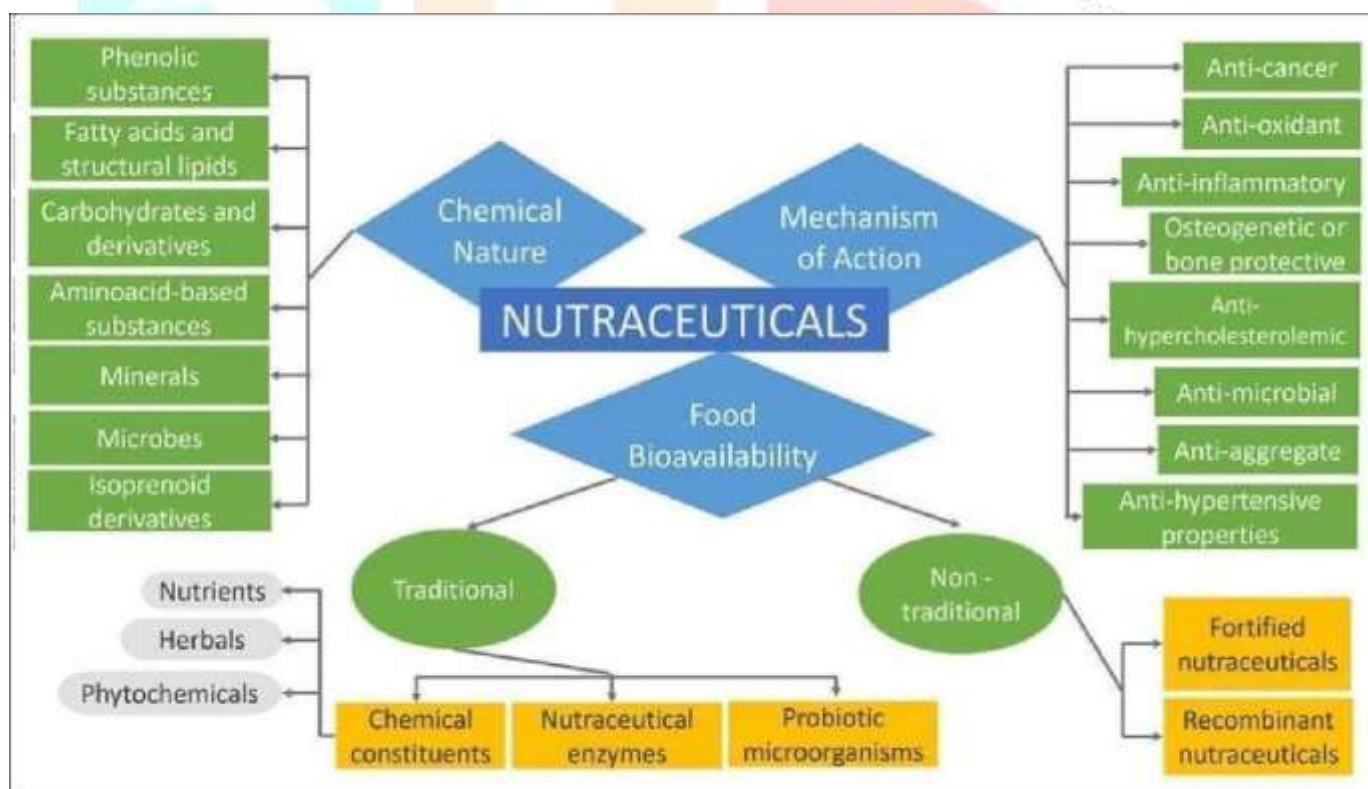


Figure.3 Classification of Nutraceuticals

Classification of nutraceuticals on the basis of the food bioavailability:-

1. Traditional nutraceuticals:-

These types of nutraceutical are obtained from natural sources without any change in their form i.e. parts of plant and herbs. The food containing naturally occurring components that give benefits to human beings.

a) Chemical Constitute:-

I. **Nutrition:-** Nutrients are primary metabolite substances obtained from plants and animals useful in growth and development and various metabolic pathways in humans. These are not chemically derived products or food. i.e naturally occurring food contains the amino acid, vitamins, and fatty acids, etc.

II. **Phytochemicals:-**(Plant Chemicals - Chemically active constituent in plants) Phytochemicals can be classified on the based on chemicals name on the basis of their properties. These are secondary metabolites of plants chemically distinguished into separate group.{10}

III. **Herbal:-** These type of chemical constitute. Herbs, often known as botanical foods, are as old as human civilization and provide a wealth of remedies to treat both acute and chronic illnesses. Several nutraceuticals are found in medicinal herbs of important components, providing a whole storage facility of medicine to treat severe and persistent ailment.

b) Prebiotic Micro-organism:-

Probiotics are live bacteria that are given to the host in sufficient quantity to provide a health benefit. They exist in powder, liquid, gel, paste, or granule form, as well as capsule form, and are commonly used to treat gastrointestinal (GI) disorders such as lactose intolerance, acute diarrhea, and antibiotic- related gastrointestinal side effects.

c) Nutraceuticals Enzyme:-

Enzymes are essential components of life; without them, our bodies would not function correctly. Anyone suffering from digestive issues such as hypoglycemia, blood sugar abnormalities, or obesity might alleviate their symptoms by adding enzyme supplements to their diet obtained from microbial, plant, and animal source.{11}

2. Non Traditional Nutraceutical:-

Nontraditional nutraceuticals are biotechnologically designed crops or food for boosting the nutrients or food enriched with the supplement. The food and crop contain biologically active components that will be biotechnologically engineered for human health improvement.

a) Fortified nutraceutical:-

Fortified nutraceutical nothing but a combination product of biotechnologically engineered crop or food (agricultural breeding) which contains bioactive components with main ingredients or nutrient.

b) Recombinant nutraceutical:-

These are the nutraceutical can be prepared by biotechnologically approved processes i.e. recombinant gene technology and fermentation in certain cases.{10}

➤ **Classification of nutraceutical on the basis of food source:-****Table. 1 Classification of Nutraceutical on the basis of food source**

Food Sources	Examples
Plants	β -Glucan, Ascorbic acid, γ -Tocotrienol, Quercetin, Luteolin, Cellulose, Lutein, Gallic acid, Perillyl alcohol, Indole-3-carbonol, Pectin, Daidzein, Glutathione Potassium, Allicin, 8-Limonene, Genestein, Lycopene, Hemicellulose, Lignin, Capsaicin, Geraniol, β -Ionone, α -Tocopherol, β -Carotene, Nordihydrocapsaicin, Selenium, Zeaxanthin, Minerals.
Animals	Conjugated Linoleic Acid (CLA), Eicosapentaenoic acid (EPA), Docosahexaenoic acid (DHA), Spingolipids, Choline, Lecithin, Calcium, Coenzyme Q10, Selenium, Zinc, Creatine, Minerals Saccharomyces boulardii (yeast), Bifidobacterium bifidum, B. longum, B. infantis, Lactobacillus acidophilus (LCI). L. acidophilus (NCFB 1748), Streptococcus salvarius (subs. Thermophilus)
Microbes	Saccharomyces boulardii (yeast), Bifidobacterium bifidum, B. longum, B. infantis, Lactobacillus acidophilus (LCI). L. acidophilus (NCFB 1748), Streptococcus salvarius (subs. Thermophilus)

➤ **Classification of nutraceutical on the basis of mechanism of action:-****Table. 2 Classification of Nutraceutical on the basis of mechanism of action**

Anticancer	Positive Influence on blood lipid profile	Antioxidant Activity	Anti-inflammatory	Osteogenic or Bone Protective
Capsaicin Genestein Daidzein α -Tocotrienol γ -Tocotrienol CLA Lactobacillus acidophilus Sphingolipids Limonene Diallylsulfide Ajoene α -Tocopherol Enterolactone Glycyrrhizin Equol Curcumin Ellagic acid Lutein Carnosol L. bulgaricus	β -Glucan γ -Tocotrienol & Tocotrienol MUFA Quercetin 3 PUFAs Resveratrol Tannins β -Sitosterol Saponins Guar Pectin	CLA Ascorbicacid β -Carotene Poly phenols Tocopherols Tocotrienols Indole-3-Carbonol α -Tocopherol Ellagic acid Lycopene Lutein Glutathione Hydroxytyrosol Luteolin Oleuropein Catechins Gingerol Chlorogenicacid Tannins	Linolenicacid EPA DHA GLA (gamma-linolenicacid) Capsaicin Quercetin Curcumin	CLA Soyprotein Genestein Daidzein Calcium Casein phosphopeptides FOS (fructooligosaccharides) Inulin

➤ **Classification of nutraceutical on the basis of chemical nature:-****Table.3 Classification of Nutraceutical on the basis of chemical nature**

Class/Component	Source	Potential Benefit
Carotenoids	Carrots	Neutralizes free radicals which may cause damage to cells
Alpha-carotene		
Beta carotene	Various fruits, vegetables	Neutralizes free radicals
Lutein	Green vegetables	Contributes to maintenance of healthy vision
Lycopene	Tomatoes and tomato products (ketchup, sauces etc)	May reduce the risk of prostate cancer
Zeaxanthin	Eggs citrus, corn	Contributes to the maintenance of healthy vision
Collagen Hydrolysate		
Collagen Hydrolysate	Gelatin	May help improve some symptoms associated with osteoarthritis
Dietary Fibre		
insoluble fibre	Wheat bran	May reduce risk of breast and / or colon cancer
Beta glucan	Oats	Reduces risk of cardiovascular disease (CVD)
Soluble fibre	Psyllium	Reduces risk of CVD
Whole Grains	Cereal grains	Reduces risk of CVD
Fatty Acids		
Omega 3 fatty acids-DHA/EPA	Tuna fish and marine oils	May reduce the risk of CVD & improve mental visual functions

CATEGORY OF NUTRACEUTICALS

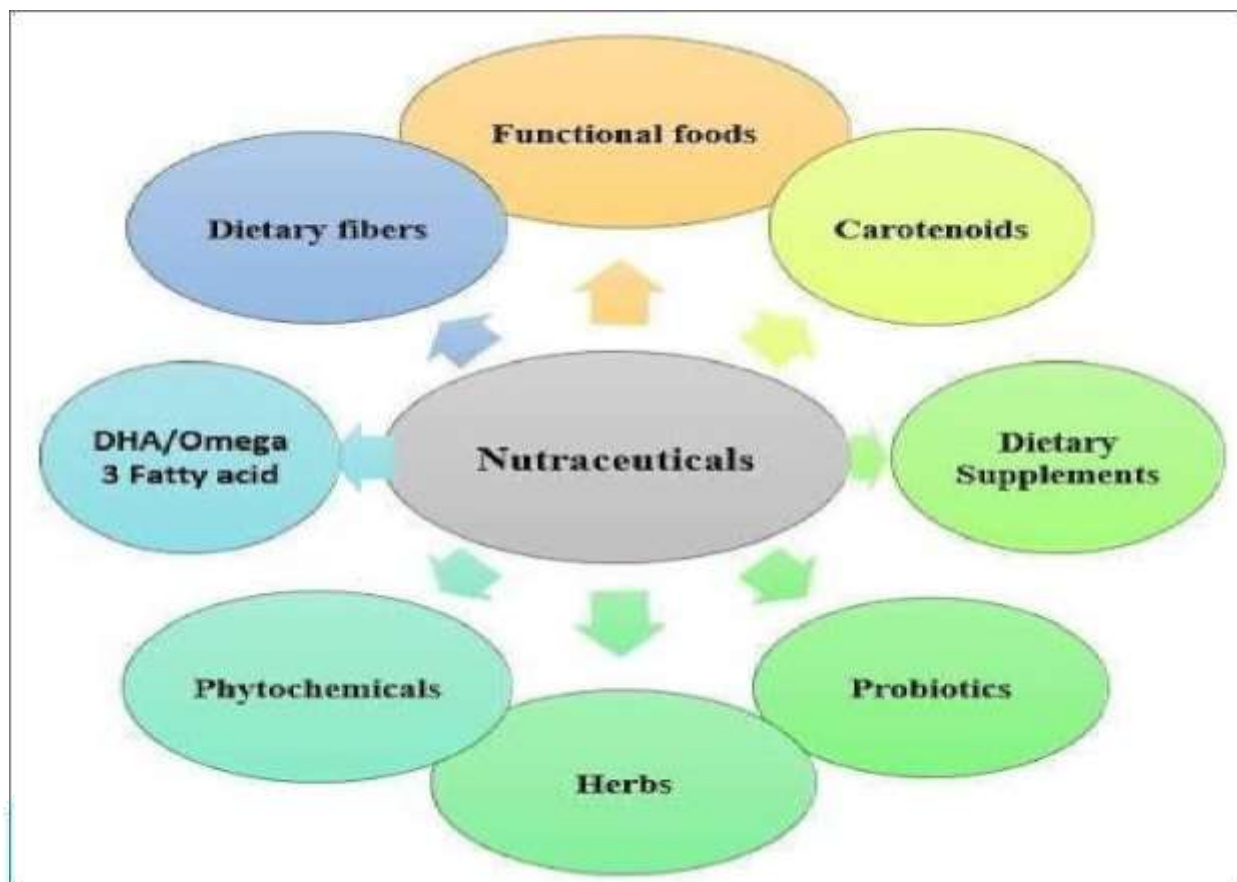


Figure. 4 Category of Nutraceuticals

1. DIETARY SUPPLEMENT:-

Dietary supplements can help improve health but can also have risks. Get the facts on supplements and how the FDA regulates them to help keep you safe.

- **Vitamins:-** such as multivitamins or individual vitamins like vitamin D and biotin.
- **Minerals:** such as calcium, magnesium, and iron.
- **Herbs:** such as echinacea and ginger.{12}

2. FUNCTIONAL FOOD:-

Functional foods play an important role in maintaining a healthy lifestyle and reducing the risk factors of various diseases.{13}

- **Probiotic:-**Probiotics are specific living microorganisms, most often bacteria or yeast that help the body digest food or help with symptoms of certain illnesses. Probiotics are naturally found in fermented foods such as yogurt and sauerkraut.{14}
- **Fortified Food:-** Fortified foods are those that have nutrients added to them that don't naturally occur in the food. These foods are meant to improve nutrition and add health benefits.{15}
- **Whole Food:-** food that has not had any of its natural features taken away or any artificial substances added a wholefood shop.{16}

3. MEDICAL FOOD:-

Medical food is food that is specially formulated and intended for the dietary management of a disease that has distinctive nutritional needs that cannot be met by normal diet alone. {17}

4. HERBAL PRODUCT:-

Herbal products, botanical products, or phytomedicines are derived from plants or botanicals and are used to maintain health or treat diseases. Herbal supplements are products specifically used for internal use. A large number of prescription drugs and over-the-counter medications originate from plant derivatives. {18}

5. SPECIALTY NUTRACEUTICAL:-

- **Omega-3:-** Omega-3 fatty acids are “healthy fats” that may support your heart health. {19}
- **Amino Acid:-** Amino acids are molecules used by all living things to make proteins. {20}

6. NOVEL FOOD:-

Novel foods are products and ingredients that have not historically been used safely as foods. {21}

- **Functional Beverage:-** A functional beverage is a nonalcoholic drink product that is formulated with ingredients, such as raw fruits, herbs, vitamins, minerals, amino acids, and other bioactive compounds that provide specific health benefits. {22}
- **Edible Insects:-** edible insects as a viable alternative to traditional animal-based proteins. {23}

7. TRADITIONAL NUTRACEUTICALS:-

Traditional nutraceuticals are defined as natural foods with their potential health attributes: this may include, but is not limited to, fruits, vegetables, grains, fish, dairy and meat products. {24}

- **Fermented Foods:-** Fermented foods are defined as “foods or beverages produced through controlled microbial growth, and the conversion of food components through enzymatic action. {25}
- **Food Staples:-** Food staples are eaten regularly—even daily—and supply a major proportion of a person’s energy and nutritional needs. {26}

ROLE OF NUTRACEUTICAL IN VARIOUS DISEASE

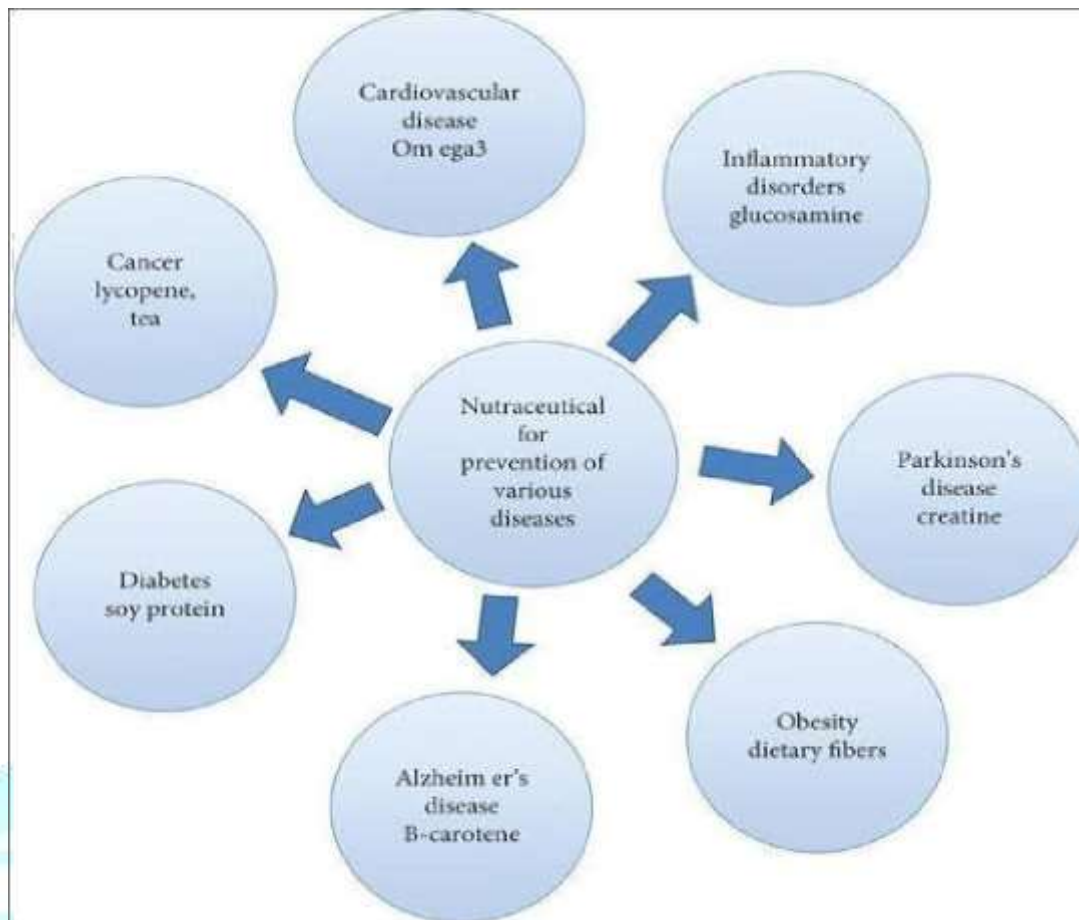


Figure.5 Role of Nutraceuticals

1. Alzheimer's disease (AD):-

Alzheimer's disease (AD), also called senile dementia of the Alzheimer type (SDAT), primary degenerative dementia of the Alzheimer's type (PDDAT), or simply Alzheimer's, is the majority ordinary form of dementia. The variety of nutraceuticals which are used to treat Alzheimer's disease is as follow:-

- **Antioxidants:-** Antioxidants are very indispensable in the treatment of almost all diseases because the majority chronic disease. {27}
- **Cardio vascular:-** Cardio vascular diseases Nutraceuticals like flavonoids, flavones, flavonones, quercetin in onion, cruciferous vegetables, black berries, cherries, berries, apples and other antioxidant vitamins and minerals may reduce the risk of death from CVDs. They inhibit cyclooxygenase pathway and anigiotensin converting enzyme (ACE) which is responsible for high blood pressure. They also prevent platelet aggregation and stickiness. Flavonoid groups strengthen tiny capillaries which carry oxygen and essential nutrients to all cells.
- **Cancer Nutraceutical:-** Cancer Nutraceutical rich bioactive dietary components have the ability to prevent cancer. Herbal nutraceuticals possess anti-mutagenic and anti-carcinogenic properties. Antioxidant activities of carotenoids, lycopene are effective for cancer. They are oxygen quencher and decreases oxidative stress. Nutraceutical controls DNA damaging factors in cells and prevents DNA transcription in tumors.
- **Diabetes Herbal:-** Dietary supplements containing nutraceuticals have proven to offer therapeutic benefit on type 2 diabetes. Soy isoflavones, omega 3 fatty acid lowers mortality and incidence of diabetes, promote insulin sensitivity, reduce glucose tolerance and bring blood sugar normal.
- **Obesity:-** Obesity is a medical condition characterized by accumulation of excess body fat. Nutraceuticals like conjugated linoleic acid, capsaicin, psyllum have an excellent anti-obese properties.

Herbal nutraceuticals like chitosan, caffeine, fenugreek, vitamin C, green tea, curcumin, black gram, bottle guard reduces body weight.

- **Parkinson's disease:-** In Parkinson disease the dopamine-releasing cells in the brain damaged due to neurodegeneration. It is the second most common age related disorder in the world 46. Plant Polyphenols, stilbenes, soybean and other phytoestrogens, vit-C, vit-D, vit-E, coenzyme and unsaturated fatty acid revealed protective roles against progression of Parkinson's disease. Herbal nutraceutical (Brahmi) is a natural brain tonic that helps in mental peace and relaxation, migraine, headache, insomnia, depression, anxiety, brain cell rejuvenation, blood circulation in the brain, improved memory function and hormone secretion.{28}
- **Oral diseases:-** Odontonutraceuticals, a new term has been discovered. It represents pleiotropic phytotherapeutic agents in dentistry as they regulate different molecular and biochemical targets. These are bioactive phytochemicals that prevents oral diseases. It may play a significant role in the complex and multifactorial oral disorders. Odontonutraceuticals includes green tea, grapes, cocoa seed extracts that are rich in polyphenols, flavonoids and proanthocyanidins.
- **Eye disorders:-** Nutraceuticals rich diet appears beneficial for age related macular degeneration. Lutein, DHA, green tea, carotenoids, flavonoids, vitamin E, coenzyme posses antioxidant activity and are affective for presbyopia, cataracts. Zeaxanthin is used for the treatment of glaucoma, visual disorder.

CURRENT TREND AND FUTURE SCOPE OF NUTRACEUTICALS

CURRENT TREND:-

- The nutraceutical industry has been experiencing rapid growth in recent years as consumers become more health-conscious and seek natural alternatives to support their well-being.
- This dynamic market is constantly evolving, driven by emerging research, changing consumer preferences, and advancements in technology.
- This article, we will explore some of the latest trends shaping the nutraceutical market and influencing product development.

1. PERSONALIZED NUTRITION:-

- One of the key trends in the nutraceutical market is the shift towards personalized nutrition.
- Consumers are recognizing that their nutritional needs are unique, and they are seeking customized solutions to address their specific health goals.
- This trend allows consumers to optimize their nutrition and achieve targeted health outcomes.

2. PLANT-BASED AND CLEAN LABEL PRODUCTS:

- The demand for plant-based and clean label products continues to rise as consumers prioritize sustainability, environmental concerns, and transparency in the products they consume.
- This trend aligns with the growing interest in veganism, vegetarianism, and eco-friendly practices, offering consumers healthier and more ethical choices.

3. IMMUNE SUPPORT:

- In the wake of the global pandemic, there has been an increased focus on immune support.

4. COGNITIVE HEALTH AND BRAIN FUNCTION:

As the awareness of mental health and cognitive well-being grows, there is a rising demand for nutraceutical products that support brain function and cognitive health.

5. SUSTAINABILITY AND ETHICAL SOURCING:

Sustainability has become a major focus in the nutraceutical market.

In conclusion, the nutraceutical market is continuously evolving to meet the demands of health-conscious consumers. {29}

FUTURE OF NUTRACEUTICALS:-

- India's nutraceutical market is on a strong growth trajectory, driven by the country's rising health-consciousness, an aging population, and the increasing prevalence of chronic diseases.
- The increasing synergy between pharmaceutical companies and nutraceutical innovation is improving the accessibility, affordability, and quality of products, benefiting the population at large.
- With a booming middle class and greater access to information, nutraceuticals are becoming a staple in the health and wellness journey of millions.
- As consumers continue to prioritize preventive health, the scope of nutraceuticals in India will only continue to grow, making it an attractive investment for businesses and a promising choice for consumers looking to improve their health naturally. {30}
- Global Trends in Nutraceutical Products:- It will grow from \$455.01 billion in 2024 to \$503.22 billion in 2025 at a compound annual growth rate (CAGR) of 10.6%. The growth in the historic period can be attributed to health consciousness, consumer education, regulatory support, scientific research, aging population.

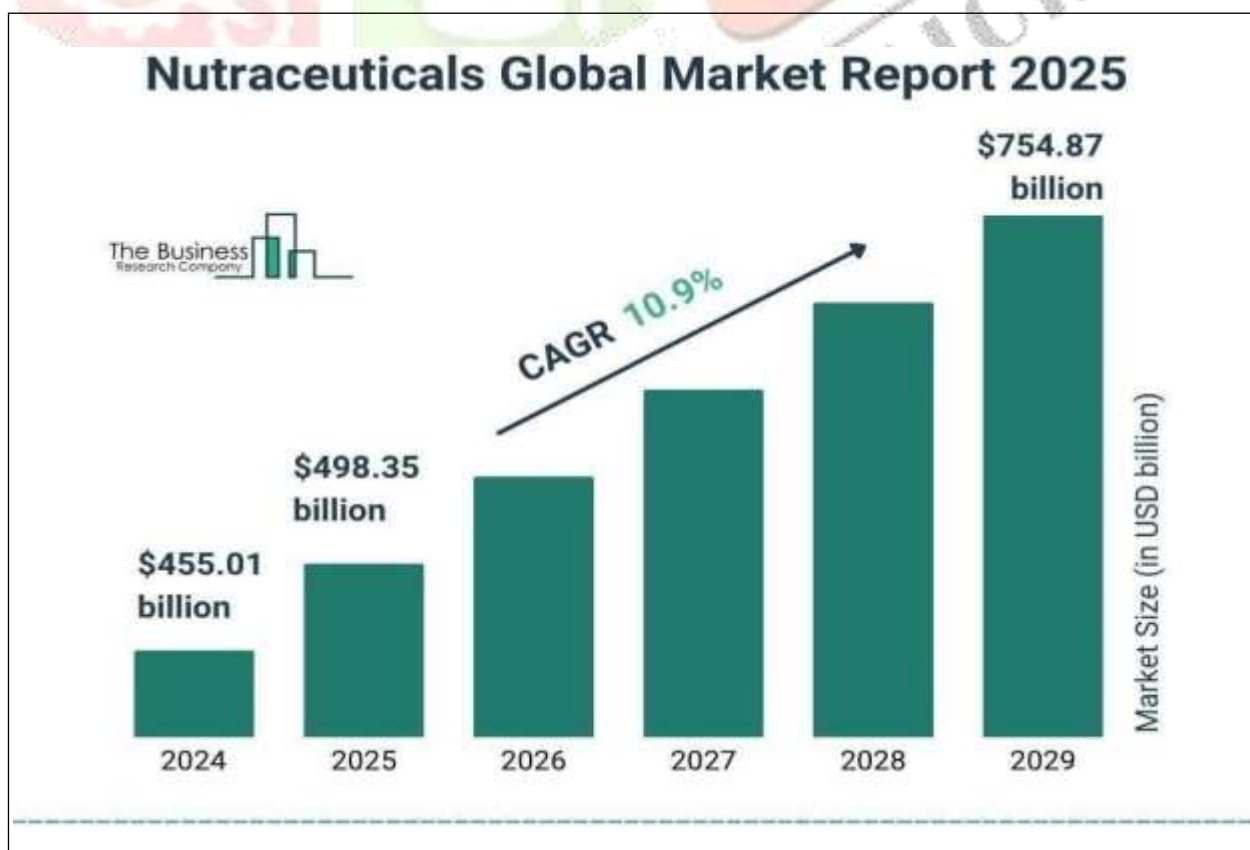


Figure. 6 Nutraceutical report in Global market

COMMON NUTRACEUTICALS PRODUCT IN MARKET

1. CHYAWANPRASH:-
2. BIO LIFE CALCIUM
3. VITAMIN E 400 IU
4. VITAMIN C TABLETS
5. PROBIOTIC CAPSULE
6. LIV.52
7. ASHWAGANDHA
8. JOINT SUPPORT
9. FISH OIL
10. L-ARGININE



Figure.7 Nutraceutical product in market

FORMULATION AND EVALUATION OF NUTRACEUTICAL TABLET

- Aim:-**

- The objective of present work was to formulate and evaluate the nutraceutical tablets of Clove and Cinnamon.

- PREPARATION OF NUTRACEUTICAL TABLET:**

- The preparation of nutraceutical tablets can vary depending on the type of nutraceutical and the desired effect. One study used a combination of natural drugs like clove and cinnamon, lactose, and mannitol as diluents, and prepared the nutraceutical tablet using direct compression method.

- Another study used ginger and Malabar nut as natural drugs, lactose, mannitol, sodium saccharine, tale, and magnesium stearate as excipients, and prepared the nutraceutical tablet using direct compression method.

- Yet another study used clove and cinnamon as natural drugs, lactose and mannitol as diluents, gum acacia as binding agent, magnesium stearate as lubricant, and tale as glidant to prepare the nutraceutical tablet using wet granulation method.

- Ingredient Used In Nutraceutical:-**

Table.4 Ingredient Used in Nutraceutical

Sr. No.	INGREDIENT(mg)	F1	F2	F3	F4
1.	CLOVE	100	-	100	-
2.	CINNAMON	-	100	-	100
3.	LACTOSE	290	290	-	-
4.	MANNITOL			290	290
5.	SODIUM SACCHARINE	2	2	2	2
6.	TALC	4	4	4	4
7.	MAGNESIUM STEARATE	4	4	4	4

COLLECTION OF MATERIAL

• **MATERIALS:-**

• Clove, cinnamon were received from local market. All other ingredients such as mannitol, magnesium stearate and talc were purchased from Central Drug House (CDH) New Delhi, India. All ingredients used were of analytical grade.{31}

• **CLOVE:-**

- Cloves are the aromatic flower buds of a tree in the family Myrtaceae, *Syzygium aromaticum*.
- cloves are dried flower buds from the clove tree.{32}



Figure. 8 Clove

• **CINNAMON (CINNAMOMUM VERUM):**

• Cinnamon is obtained from the bark of a tree belonging to the Cinnamon genus, usually Cinnamon or Cinnamomum. It has a long history of use as a spice and medicine in many cultures. Clutter. These products help improve healing abilities.



Figure.9 Cinnamon

• **LACTOSE:-**

• Lactose is a disaccharide composed of galactose and glucose and has the molecular formula $C_{12}H_{22}O_{11}$. Lactose makes up around 2–8% of milk (by mass). The name comes from lac (gen. lactis), the Latin word for milk, plus the suffix -ose used to name sugars.{33}

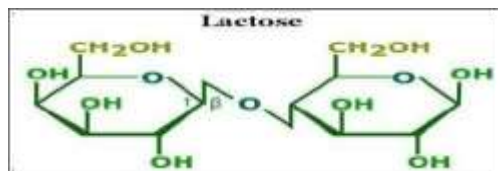


Figure.10 Lactose

- TALC:-**

- Talc, common silicate mineral that is distinguished from almost all other minerals by its extreme softness (it has the lowest rating).
- Talc is also used in lubricants, leather dressings, toilet and dusting powders, and certain marking pencils. {34}



Figure.11 Talc

- MANNITOL:-**

- Mannitol appears as odorless white crystalline powder or free-flowing granules.
- Mannitol is an osmotic diuretic that is metabolically inert in humans and occurs naturally, as a sugar or sugar alcohol, in fruits and vegetables. {35}



Figure.12 Mannitol

- MAGNESIUM:-**

- Magnesium stearate is a metal-organic compound, a salt of magnesium and stearic acid with the idealized chemical formula $(C_{17}H_{35}CO_2)_2Mg$.
- Its applications exploit its softness, insolubility in many solvents, and low toxicity. {36}

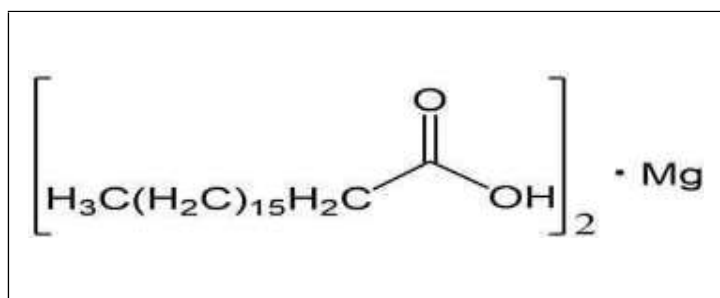


Figure.13 Magnesium

METHOD:-

- Nutraceutical tablets containing clove and cinnamon were prepared by direct compression method. Other ingredients like lactose were used as diluent, magnesium stearate as lubricant and tale as glidant.
- All the excipients along with API weighed as shown in Table and passed through sieve.
- Then, all ingredients were mixed following geometric mixing excluding glidant and lubricant thoroughly for 15min.
- The powder blend was thoroughly mixed with tale and magnesium stearate and compressed into a 400mg tablet using single rotatory punching machine.{37}

EVALUATION OF NUTRACEUTICALS TABLET**1. Pre-Compressional Studies Of Powder Blend:-**

- In development of new dosage form preformulation study is the prior step in the potential drug development. It is the principal investigation in the drug development to obtained information on the known properties of compound and the proposed development schedule. So, this preformulation investigation may merely confirm that there are no significant barriers to compound development. Following pre-compressional parameters were studied like angle of repose, bulk density, tapped density, compressibility indices.

2. Angle of repose:-

- It is the maximum angle that can be obtained between the freestanding surface of powder heap and the horizontal plane. It was determined by using fixed funnel method. Specified amount of powder drug was transfer to the funnel keeping the orifice of the funnel blocked by thumb. When powder was cleared from funnel then measured its angle of repose.

3. Bulk density:-

- It is the ratio of bulk mass of powder to the bulk volume. It is denoted by pb. Bulk density is used to find out homogeneity. Bulk density (pb) = M/V_b Where, M is the mass of the sample, V_b bulk volume.

4. Tapped density:-

- It is the ratio of the weight of powder to the minimum volume occupied in measuring cylinder. Tapped density is determined by placing a graduated cylinder containing known mass of drug or formulation on a mechanical tapper apparatus which is operated at fixed no. of taps (1000) until the powder bed reached a minimum volume.

5. Post-compressional studies of prepared nutraceutical tablets:-

- The nutraceutical tablets were evaluated for various parameters after consideration of preformulation to overcome errors during formulation preparation. These are like appearance, thickness, weight variation, hardness and friability. All the evaluation parameters of all formulations are given.

6. Physical appearance:-

- The general appearance of tablet was studies visually in shape, color, texture and odou The tablet thickness was calculated by Vernier calipers. Tablet was put in between two jaws vertically and measured thickness and 6 tablets were used for this test and expressed in mm.

7. Weight variation:-

- Weight variation test is run by weighing 20 tablets individually, calculating the average weight and comparing individual tablet weight to the average. The weight variation test would be a satisfactory method of determining the drug content uniformity of tablets.

8. Friability:-

- It is determined by Roche friabilator, subjects a number of tablets to combined effects of abrasion and shock by utilising a plastic chamber that revolves at 25 rpm, dropping tablet from inches distance operated for 100 revolutions. Preweighed tablets were dusted and re-weighed and according to standard limit friability should be less than 1%.{37}

CONCLUSION

To conclude, nutraceuticals area potentially growing sector and are engaged in both the fields, either medical treatment or nutrition so as to assure integrated medical assistance. These act as potential dietary supplements, prevention of diseases such as CVD, the support and treatment of various types of cancer, and other healthcare benefits. Therefore, nutraceutical industries now understand and perceive extensively about the potential success of nutrients that affect people in healthcare. At present, medical care is assessed to be the domain of drugs. On the contrary, nutrition is only appraised to be a product for healthy living. In the forthcoming years, it is anticipated that work will be performed, as they both interact and complement each other. The implementation of newer technologies such as the application of genetically modified technology in the food industry, nanotechnology-based nutraceuticals, etc., leads to better medical treatment and health care benefits, which further extended the increase in the nutraceuticals revenue market. The scientific research ratifies that the improved safety and potential effects of newly developed nutraceutical products will further stimulate the investments in newer technologies, such as nutrigenomics, converging techniques, varied imaging technologies and its applications in nutrition development and healthcare.

we conclude that the nutraceutical tablets were prepared by direct compression method and gave satisfactory and acceptable result. Conventional tablet of nutraceutical shows immediate drug release due to direct compressed tablet. The formulation containing clove could be more beneficial as an analgesic due to the presence of eugenol than cinnamon containing tablet. From the above research work it was concluded that herbal nutraceutical tablet prepared in the form of cost effective tablet to minimize patients compliance in regarding suppressing side effects and enhancing positive effects on the body.

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