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V-Discover

**THE STUDENTS
DIGITAL MAGAZINE**

THEME : NUTRACEUTICAL



SWAMY VIVEKANANDHA COLLEGE OF PHARMACY

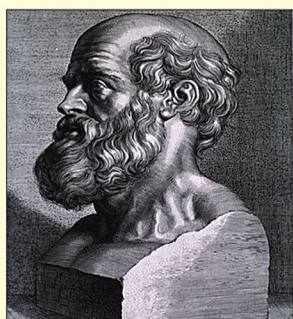
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Nutraceutical

INTRODUCTION...

"Our Food should be Our Medicine and Our Medicine should be Our Food" – Hippocrates



Greek Physician Hippocrates (Father of Medicine) said several centuries ago "Let Food be Your Medicine" The Philosophy behind is "Focus on Prevention" Nutraceuticals term combining the words "Nutrition" and "Pharmaceutical" in 1989 by Stephen DeFelice; MD, Founder & chairman of the Foundation for Innovation in Medicine (FIM)



"Nutraceutical" is a nutritional supplement developed with the intention of preventing or treating illness, according to marketing terminology. Beginning with separated nutrients, they go to processed meals, nutritional supplements, and ultimately genetically modified "designer" foods. Supplemental nutrition has the potential to enhance health. Life expectancy is increased as it even slows down the aging process and guards against chronic diseases.

GLOBAL NUTRACEUTICALS MARKET SIZE

The global Nutraceuticals Market size was worth around USD 353 billion in 2022 and is predicted to grow around USD 700 billion by 2030 with a compound annual growth rate (CAGR) of roughly 9.4% between 2022 and 2030. The report analyzes the global Nutraceuticals Market drivers, restraints/challenges, and the effect they have on the demands during the projection period.

Global Nutraceuticals Market

The nutraceuticals market profiles key players such as DSM, PepsiCo Inc., Amway, Herbalife Nutrition Limited, Pfizer Inc., Archer Daniels Midland Company, Nestle S.A., The Kraft Heinz Company, General Mills, The Hain Celestial Group, Inc., BASF SE, Nature's Bounty, Abbot Industries, General Mills Inc.,

Regional Analysis

North America | Europe | Asia Pacific
Latin America | Middle East and Africa

By Ingredient

- Probiotics
- Prebiotics
- Sweeteners
- Vitamins
- Whey Proteins
- Proteins
- Omega-3
- Minerals

By Product

- Dietary Supplements
- Functional Beverages
- Functional Foods

2023-2030

CAGR
9.4%

USD 353 billion

2022

USD 700 billion

2030

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Facts Factors

GLOBAL NUTRACEUTICALS MARKET SIZE

Nutraceutical Product Market Analysis

CAGR
7.3%

Market Value Projection 2032

USD 673.9 Billion

Dominating Region

North America

Fastest Growing Region

Asia-Pacific

The top nutraceutical ingredients in terms of market share include vitamins, minerals, and herbals/botanicals

Increasing demand for functional food and dietary supplements, drives the nutraceutical product market size

Indian Nutraceuticals Market

Market forecast to grow at a CAGR of 11.4%

USD 11.55 Billion

USD 6.11 Billion

2024

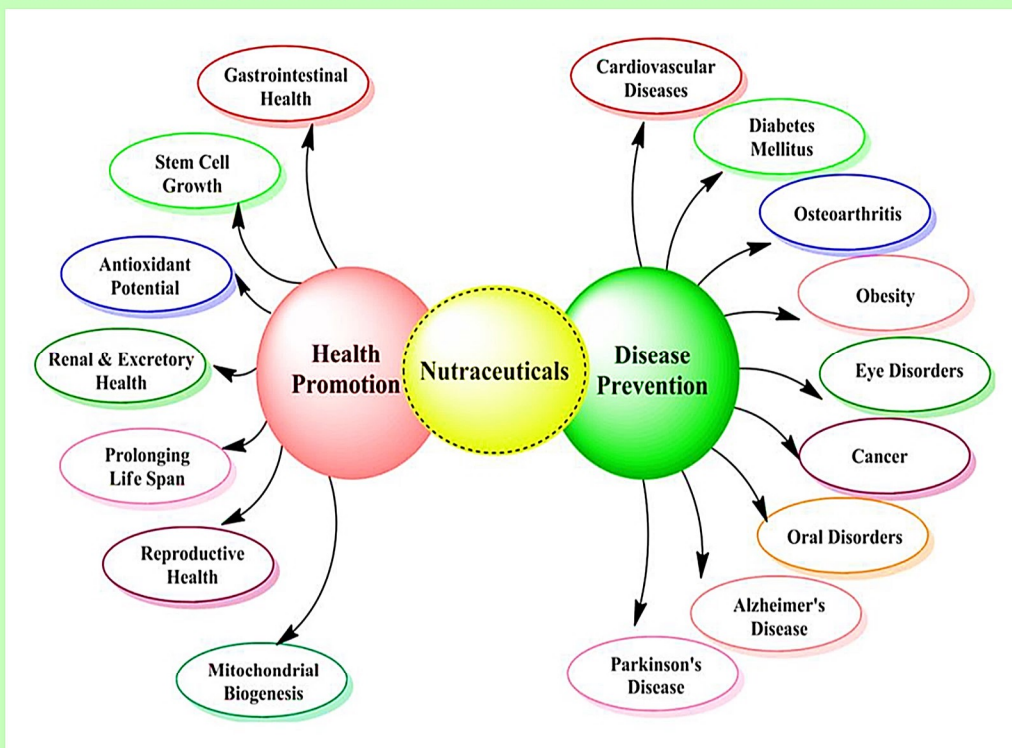
2030

India Nutraceuticals Market was valued at USD 6.11 billion in 2024 and is anticipated to reach USD 11.55 billion by 2030, with a CAGR of 11.39% during 2025-2030

GLOBAL NUTRACEUTICALS MARKET SIZE

Nutraceuticals are the combination of pharmaceuticals with nutrition and used as supplements in the form of capsules, pills, powders or topical formulations containing bioactive components to cure the ailments.

NUTRACEUTICALS IN DISEASE PREVENTION AND HEALTH PROMOTION



CHEMICAL CLASSES OF NUTRACEUTICALS AND THEIR SOURCES AND BENEFITS

Class	Components	Sources	Benefits
Flavonoids	Anthocyanidins, catechins, flavanones, flavones	Fruits, tea, citrus and fruits/vegetables	Neutralizes free radicals, reduces risk of cancer
Phenols	Caffeic acid, ferulic acid	Citrus, fruits, and vegetables	Reduces heart & eye disease
Carotenoids	Carotene, lutein, lycopene, zeaxanthin	Carrots, various fruits and vegetables, green vegetables, tomato, eggs, citrus, and corn	Neutralizes free radicals, maintains healthy vision, reduces prostate cancer
Collagen hydrolysate	Collagen hydrolysate	Gelatin	Improves osteoarthritis
Dietary fibers	Beta glucan, soluble/ insoluble fibers, whole grain	Wheat bran, oats, psyllium, and cereal grain	Reduces risk of breast and colon cancer & CVD
Fatty acids	Omega-3 fatty acid-DHA/EPA, linoleic acid	Fish and marine oils	Reduces CVD & certain cancer, improves mental & visual function
Prebiotics/ probiotics	Fructo-oligosaccharides, <i>Lactobacillus</i>	Onion powder, yogurt, and other dairy products	Improves gastrointestinal health
Glucosinolates, indoles	Isothiocyanate, sulforaphane	Cruciferous vegetables	Induces detoxification enzymes, reduces risk of cancer
Tannins	Proanthocyanides	Cranberries, cranberry products, and cocoa	Improves urinary tract health, reduces risk of

MARKETED NUTRACEUTICAL PRODUCTS

Product	Category	Contents	Manufacturer
Calcirol D-3	Calcium supplement	Calcium and vitamins	Cadila Healthcare Limited, Ahmedabad, India
GRD	Nutritional supplement	Proteins, vitamins, minerals, and carbohydrates	Zydus Cadila Ltd., Ahmedabad, India
Proteinex®	Protein supplement	Predigested proteins, vitamins, minerals, and carbohydrates	Pfizer Ltd., Mumbai, India
Coral calcium	Calcium supplement	Calcium and trace minerals	Nature's Answer, Hauppauge, NY, USA
Chyawanprash	Immune booster	Amla, ashwagandha, pippali	Dabur India Ltd.
Omega woman	Immune supplement	Antioxidants, vitamins, and phytochemicals (e.g., lycopene and resveratrol)	Wassen, Surrey, UK
Celestial Healthtone	Immune booster	Dry fruit extract	Celestial Biolabs Limited
Amiriprash (Gold)	Good immunomodulator	Chyawanprash, Avaleha, Swarnabhasma, and RasSindur	Uap Pharma Pvt. Ltd.
Kellogg's Muesli, cornflakes, oats	Immune supplement	Antioxidants, vitamins, and phytochemicals	Kellogg
PediaSure	Nutritious supplement, supports the immune system	Antioxidants (vitamins C & E and selenium), DHA, omega-3 [†]	Abbott
Horlicks	Nutrition for growth and development	Calcium, vitamin, iodine, and protein	GlaxoSmithKline Consumer Healthcare
ActiPlus Dahi, CEREGROW, MILO, Baby & Me	Growth and development immune supplement	Antioxidants, vitamins, minerals, and proteins	Nestlé
Soya Industries Nutrela	Nutritious supplement	Carbohydrate, proteins, fibers, vitamins	Ruchi
Amul	Nutritious supplement	Skimmed milk, sucrose, carbohydrates, minerals	Gujarat Co-operative Milk Marketing Federation
NutriFit	Improve body composition, boost your energy	Carbohydrate, proteins, fibers, lipids, vitamins, minerals, etc.	Mother Dairy Fruit & Vegetable
Yakult	Probiotics, immunity booster	<i>Lactobacillus casei Shirota</i>	Yakult

MARKETED NUTRACEUTICAL PRODUCTS

Product	Category	Contents	Manufacturer
Quaker oats	Nutritious supplement	Salt, guar gum, calcium carbonate (thickener), vitamins, and minerals	Pepsi Co
Bournvita malt drink	Nutritious supplement	Malt extracts, cocoa, carbohydrates, emulsifiers, vitamins, minerals, and salt	Mondelez
Nutrilite – range of products	Essential supplement	All plant protein powder, calcium, co-enzymes, iron tablets, etc.	Amway
Dabur Glucose – D	Energy supplement	Dextrose, vitamin D, calcium, phosphorous, and energy	Dabur India Ltd
Calcium Sandoz	Dietary supplement	Calcium lactate-gluconate, calcium carbonate, and calcium	Novartis
Herbalife protein powder	Nutritious (protein) supplement	Soy protein, plant-based protein powder, and fructose	Herbalife International
Himalaya Pure Herbs	Healthcare Medical Equipment Personal Care Sports	Pure herbs: organic ashwagandha, amla, neem, turmeric, etc.	Himalaya Drug Company

BIOACTIVE COMPONENTS FROM DIFFERENT HERBS AND THEIR FUNCTIONS

Nutraceuticals has developed from its traditional roots to become a highly specialized scientific industry where the effectiveness and safety of the products are supported by data, recent research, and cutting-edge technological advancements.

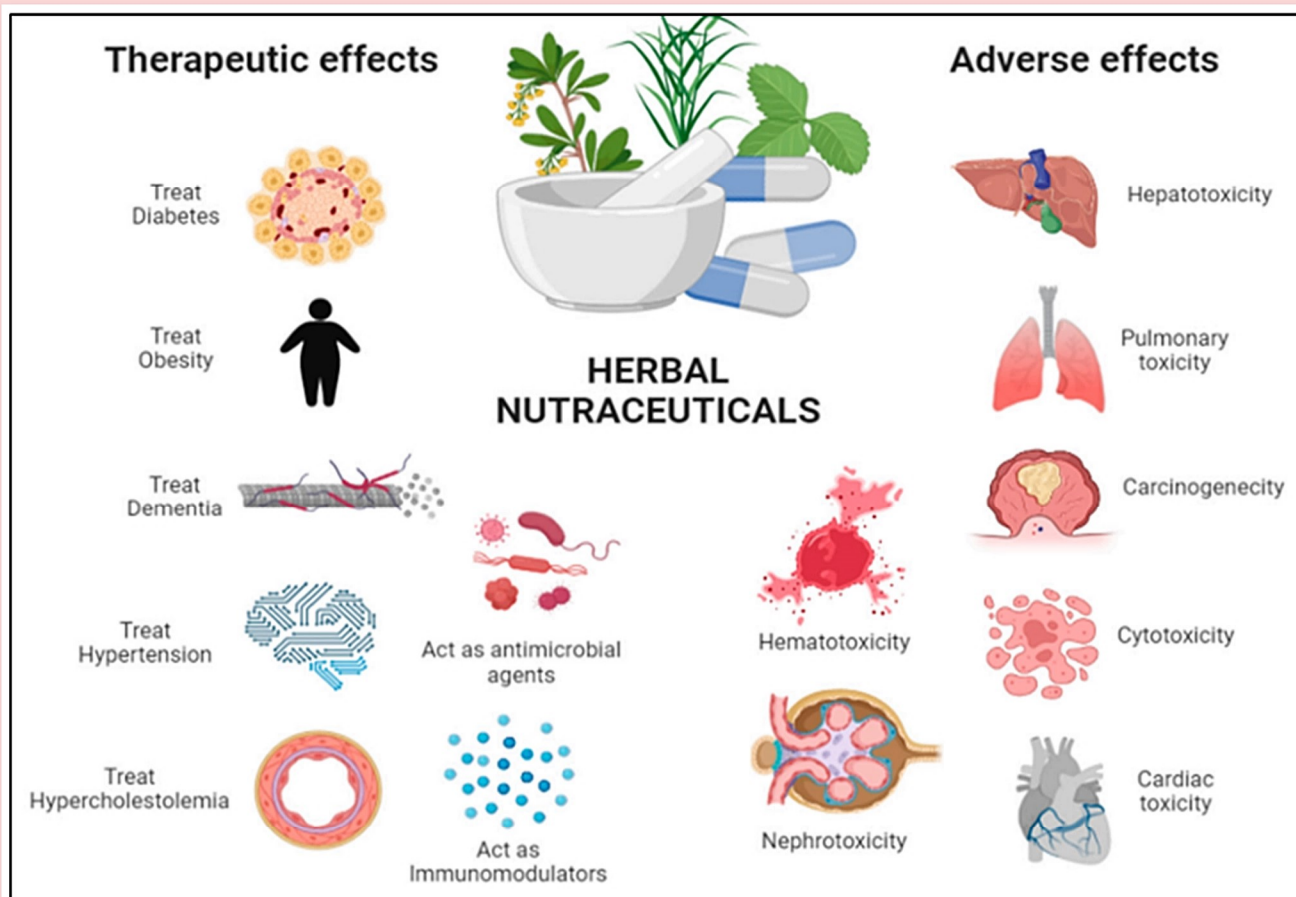
Product Name	Form	Herbal Ingredients Used	Benefits	Manufacturer
Aloe vera 200x	Powder	Aloe vera	Anti-viral, anti-bacterial and anti-inflammatory	Purenso Select
Amla powder	Powder	<i>Emblica officinalis</i>	Antioxidant, enhances cardiac health and decreases levels of bad cholesterol, offers a rise in immunity and boosts energy in a frail body	Bixa Botanical
Ayurvedic hair and vitality booster juice	Syrup	Winter cherry, false daisy, spikenard	Helps men tackle issues, such as decreased energy levels and recurring hair problems	Sesa Care Pvt. Ltd.
Bramhi	Pill	Water hyssop	Increases and improves intelligence, stimulates mental agility and treats weak memory	Himalaya Wellness Company
Nutrilite soft gels	Gel	Green tea extract	Positively affects skin health	Amway
De-stress	Syrup	Water hyssop, spikenard, winter cherry, ginseng, aloe-weed	Relieves from sleep and stress related issues	Naturamore
Dr noni juice	Syrup	Garcinia	Helps in joint pains, maintain a healthy heart, aids in maintaining healthy blood sugar levels, stimulates the release of digestive enzymes	LA Nutraceuticals
Fenugreek tablets	Pill	Fenugreek	Enhances immunity, stimulates lactation and improves wellness	Bhumija Lifesciences
<i>Ginkgo biloba</i> , bilberry, and lutein	Capsule	<i>Ginkgo biloba</i> , bilberry, lutein	Boosts blood flow to the brain, which may be beneficial for depression, headaches, vertigo, tinnitus, and memory loss; also enhances eyesight.	Healthvit
Go365 nutra tablet	Pill	Turmeric and Boswellia	Reduces inflammation and prevents cartilage degradation, reduces chronic joint pain, stiffness, and swelling	Charak Pharma Pvt. Ltd.
Hair skin vitamins	Capsule	Turmeric and primrose oil, hyaluronic acid	Stimulates hair strength and glowing skin	Neuherbs
Herbalance	Gel	Chasteberry, <i>Rhodiola rosea</i> , red raspberry	Aids in maintaining hormonal balance and treats menstrual problems	Oziva
Holistic calcium and curcumin	Pill	Curcuminoids and piperine	Fights cancer, ageing, arthritis and inflammation	Zeroharm Sciences

MARKETED NUTRACEUTICAL PRODUCTS

Herbs	Scientific Name	Bioactive Compound	Functions	References
Aloe vera	<i>Aloe barbadensis</i> Miller.	Flavonoids, lectins, terpenoids, fatty acids, tannins, anthraquinones, pectins, hemicelluloses, glucomannan, campesterol, β -sitosterol, salicylic acid and vitamins, such as A, C, E, β -carotene, B1, B2, B3, B6, choline, B12, folic acid	Anti-inflammatory properties, treatment of skin problems, such as wounds burns; antihyperlipidemic, anticancer, antidiabetic and antioxidant properties.	
Angelica	<i>Angelica archangelica</i> .	β -phellandrene, umbelliprenin, phenols, furocoumarins, such as bergapten, xanthotoxin and angelicin	Treatment of arthritis, heartburn, flatulence, anorexia, circulation problems, respiratory catarrh, insomnia, nervousness and plague.	
Anise	<i>Pimpinella anisum</i> .	Trans-anethole, coumarins, flavonoids and lipids	Treatment of constipation, indigestion, menopausal problems and migraine; also protects against insects.	
Aralia	<i>Polyscias fruticosa</i> .	Petroselinic acid, triterpenoid saponins, sterols, diterpenoids, and acetylenic lipids	Treatment of rheumatoid arthritis, hepatitis bruises, carbuncles, and lumps.	
Bay	<i>Laurus nobilis</i> . L.	Cholesteric-7-en-3 β -ol, cholesteric-4-en-3 β ,6 β -diol, batilol and ceramide	Regulation of uric acid levels and blood cholesterol; also elicits anti-inflammatory, antidiarrheal and antidiabetic activities	
Bayberry	<i>Myrica pennsylvanica</i> .	Anthocyanidins and flavonols	Treatment of sore throat, vaginal discharge, colitis, wounds, ulcers, headache, colds, nausea and diarrhea; also enhances circulation.	
Bee balm	<i>Monarda didyma</i> L.	Polyphenols, flavonoids, monoterpene aldehyde, monoterpene glycosides, triterpenes, sesquiterpenes, resin, tannin and essential oils	Elicits diaphoretic, antiseptic, emmenagogue, antimicrobial, antispasmodic, anti-inflammatory actions; may also acts as a carminative, diuretic, expectorant, and sedative.	
Burnet	<i>Sanguisorba minor</i> .	Phenolic acids (chlorogenic, ellagic, gallic, caffeic, and rosmarinic acid), flavonoids, catechin derivatives (catechin, epigallocatechin gallate) and neolignans	Treatment of ulcerative colitis, dysentery, diarrhea, bladder problems, hemorrhoids, phlebitis and varicose veins.	
Calamint	<i>Clinopodium nepeta</i> .	Dihydrocarveol, dihydrocarveol acetate, dihydrocarveol, 1,8 cineole, cis-carvyl acetate, and pulegone	Shows antioxidant, antimicrobial, anti-ulcer, anti-inflammatory, insecticidal properties.	
Caraway	<i>Carum carvi</i> .	Carvacrol, carvone, α -pinene, limonene, γ -terpinene, linalool, carvenone, and p-cymene	It acts as an expectorant, stimulant and antispasmodic agent; can be used to treat nausea, stomach aches and constipation.	
Chamomile	<i>Matricaria recutita</i> .	Chamomile are levomenol and its oxides, apigenin, azulenes, farnesene, spathuleno, and spiroethers	Treatment of hay fever, muscle spasms, inflammation, menstrual disorders, wounds, ulcers, insomnia, gastrointestinal disorders, hemorrhoids and rheumatic pain.	
Dill	<i>Anethum graveolens</i> L.	Sinapic, vanillic acids and rutin	Has been traditionally used for treating stomach ailments, colic pain, hiccups, bad breath, flatulence, and hemorrhoids.	
Fennel	<i>Foeniculum vulgare</i> .	Quinic acid, 4-O-caffeoylquinic acid, p-coumaric acid, and 4-O-caffeoylquinic acid, rosmarinic acid and chlorogenic acids	Beneficial actions on immune system, collagen synthesis, tissue repair, cellular protection, blood sugar regulation, bone development, and wound healing.	
Garlic	<i>Allium sativum</i> .	Diallyl thiosulfonate (allicin), diallyl sulfide, diallyl disulfide, diallyl trisulfide, E/Z-ajoene, S-allyl-cysteine, and S-allyl-cysteine sulfoxide (L-alliin)	Decreases the risk of cancers, and osteoarthritis; may treat cardiovascular diseases, elevated cholesterol and blood pressure.	
Ginger	<i>Zingiber officinale</i> .	Gingerols, shogaols, and paradols	Treatment of indigestion, nausea, flu, regulates blood insulin levels and BMI	
Ginkgo	<i>Ginkgo biloba</i> .	Terpenoids, flavonoids, biflavonoids, organic acids, polyphenols, ginkgolides and bilobalide	Enhancement of memory and can treat blood disorders.	
Hyssop	<i>Hyssopus officinalis</i> .	Diosmin, isopinocampheol and pinocampheol	Treatment of toothache, and dysfunctions of the nervous, pulmonary, uterine, digestive and urinary systems.	
Lemon grass	<i>Cymbopogon citratus</i> .	Myrcene, limonene, citral, geraniol, citronellol, geranyl acetate, neral, and nerol	Reduces pain, fever, blood sugar and cholesterol; enhances menstrual flow and acts as an antioxidant.	

HERBAL NUTRACEUTICALS

Herbal nutraceuticals aid in promoting and sustaining good health as well as extending life expectancy and improving the quality of life. Numerous disorders, including cancer, neurological diseases, and cardiovascular diseases, can be treated using nutraceuticals.



NUTRACEUTICALS USED IN PEDIATRIC AGE

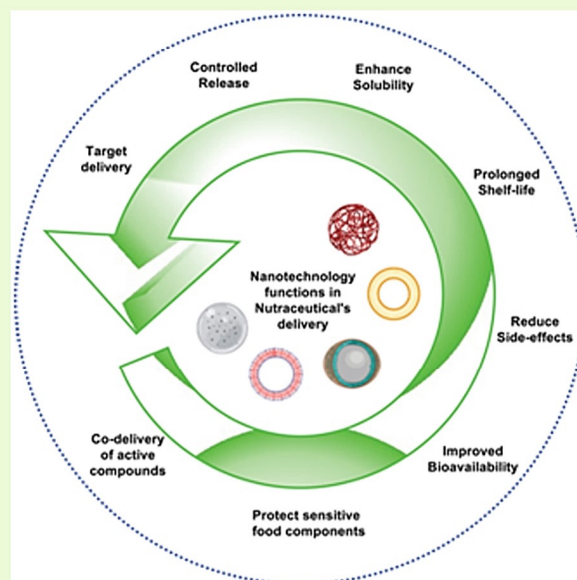
Nutraceutical	Dose	Notes
5-HYDROXYTRYPTOPHAN	5 mg/kg/day	Side effects: nausea, abdominal pain, drowsiness
MAGNESIUM	1.5–4.5 g/day	Side effects: flatulence, diarrhea. Contraindications: severe renal failure
RIBOFLAVIN	25–400 mg/day	Side effects: yellowish urine, gastro-intestinal symptoms
MELATONIN	3 mg/day before night sleep	High doses may cause daytime drowsiness, impaired physical and mental performance, suppressed body temperature and elevated blood prolactin levels

The use of nutraceuticals has become widespread in clinical practice, including non-specialist settings. Although there is no clear evidence of their efficacy in children and they are not mentioned in the most recent guidelines, nutraceuticals are often used in the prevention of headache, particularly in mild and occasional forms, when parents prefer not to start other therapies. Among these, riboflavin, magnesium and melatonin are the most widely used, since they are considered safe and well-tolerated.

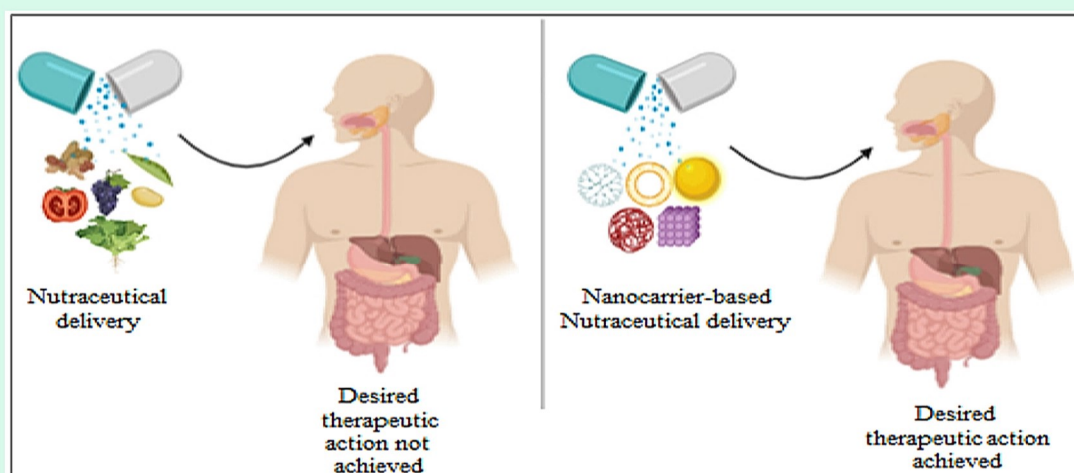
NANO-NUTRACEUTICALS

In recent decades, the combination between nutraceuticals and nanotechnology has received a lot of attention from several research organizations.

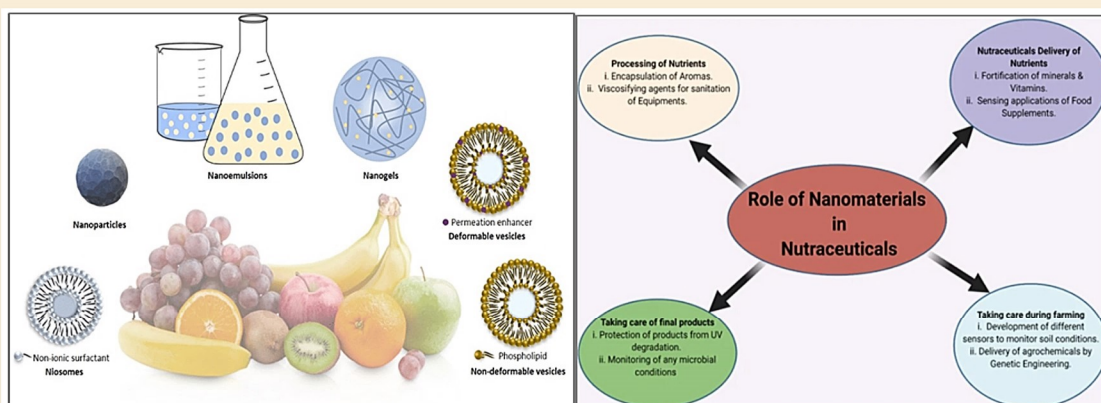
The application of Nanotechnology to Nutraceuticals has been rapidly growing due to its ability to enhance the Bioavailability of the loaded Active ingredients, resulting in improved therapeutic/Nutraceutical outcomes



NANO-CARRIER BASED NUTRACEUTICAL DELIVERY SYSTEM



ROLE OF NANOCARRIERS USED FOR THE DELIVERY OF NUTRACEUTICALS



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