



A REVIEW ON VARIOUS TYPE OF NUTRACEUTICAL

¹ Ms. Kamble S.T, ² Ms. Lohar A.G, ³ Mr. Chaugule M .J, ⁴Mr. Awale R.V, ⁵ Mr. Kalange O.S.

¹ Lecturer, ² Lecturer, ³ Scholar ⁴ Scholar, ⁵Scholar

¹Department of Pharmaceutics,

Sawkar Pharmacy College Jaitapur ,Satara, India.

Sawkar Pharmacy College Jaitapur ,Satara, India.

Sawkar Pharmacy College Jaitapur ,Satara, India.

Abstract: Nutraceuticals have gotten broad interest because of their accepted security. Nutraceuticals are food that gives clinical or clinical benefits including the neutralization and furthermore treatment of an infection. These nutraceuticals help in battling part of the critical ailments of the century like heaviness, cardiovascular ailments, sickness, osteoporosis, joint aggravation, diabetes, cholesterol, etc. Nutraceutical appreciates high ground over the prescription since they avoid auxiliary impact, have regularly dietary improvement, etc. Nutraceutical in light of their ordinary source, substance gathering, classes into three key terms - supplements, herbals, dietary supplements, etc. The most rapidly creating parts of the business were dietary improvements (19.5 percent every year) and typical/normal things (11.6 percent every year). Overall nutraceutical market is surveyed as USD 404.8 billion by 2025. FDA controlled dietary improvements as food sources to ensure that they were secured. In 2006, the Indian government passed Disinfection and Standard Exhibit to deal with the nutraceutical business. Normal nutraceutical is used as a solid instrument in staying aware of prosperity and to act against restoratively impelled extreme and steady contaminations, as needs be propelling ideal prosperity, life length, and individual fulfillment. The Present article revolves around the prerequisite for adhere to the acknowledged shrewd eating fewer carbs models, progression of new nutraceuticals/useful food sources/food supplements with novel clinical benefits, clarification frameworks of action of these things, to describe the intensive pieces of nutraceutical. This article could go probably as a gadget to next to each other with the new upgrades in nutraceutical research.

Keywords: Dietary improvements, Food supplements, Overall market, Ailments, Nutraceuticals.

I. INTRODUCTION

Nutraceuticals is a time span got from "supplements" and "pharmaceutics." The time-frame is carried out to products which may be removed from regular merchandise, dietary enhancements (supplements), one of a kind eating regimens, and handled dinner's comprehensive of cereals, soups, and beverages that beside supplements additionally are utilized as medication. Nutraceuticals are merchandise, which beside supplements likewise are utilized as medication. A nutraceutical item can be depicted as a substance, which has physiological advantage or gives security contrary to consistent sickness. Nutraceuticals can be utilized to upgrade wellbeing, delay the created old cycle, save you nonstop illnesses, development ways of life anticipation, or guide the shape or normal for the body. These days, nutraceuticals enjoy procured sizable leisure activity as a result of limit dietary, insurance and medicinal impacts. Ongoing exploration have demonstrated promising results for those mixtures in a few issues. In the current evaluation a ton endeavor has been committed to give new standards generally nutraceuticals principally founded absolutely on their ailment intensify signs. Accentuation has been made to offer normal nutraceuticals strong on troublesome therapeutic issues related with oxidative tension alongside Responsiveness, Alzheimer, cardiovascular, disease, diabetes, and eye, safe, incendiary and Parkinson's sicknesses notwithstanding grossness. The as of now posted papers practically excellent components of nutraceuticals as any open door for professionally prescribed drugs had been looked through the utilization of clinical sites which incorporate Medline, PubMed, and Google Researcher. The pre-owned articulation covered nutraceutical and sensitivity, Alzheimer, cardiovascular, disease, diabetes, and eye, insusceptible, provocative or Parkinson. In the US, the expression "nutraceutical" products are managed as medications, dinner's substances and wholesome dietary enhancements. Nutraceuticals, in judgment to physician recommended drugs, are substances, which for the most part have now at this point not patent assurance. Both drug and nutraceutical compounds is most likely used to treatment or save you sicknesses, but handiest drug compounds have legislative assent. A wholesome supplement is accepted into significance as an item that bears or incorporates one or more noteworthy of the resulting dietary substances: A mineral, a nutrient, an amino corrosive, a logical spice or different organic, a nourishing substance to be utilized with the guide of utilizing fellow to supplement the eating routine with the guide of utilizing developing the whole every day admission, or a concentrate, metabolite, constituent, concentrate, or combos of those substances. Nutraceuticals are of those dietary enhancements which may be utilized for wellness works beside sustenance. Some celebrated nutraceuticals comprise of ginseng, Echinacea, unpracticed tea, glucosamine, omega-3, lutein, folic corrosive, and cod liver oil. Greater part of the Nutraceuticals own a few recuperating properties. These days nutraceuticals have expect tremendous side interest on account of cap

potential wholesome, insurance and mending impacts. The overall nutraceutical commercial center length is supposed to achieve an expense of USD 722.forty nine billion through 2027, expanding at a Build Yearly Development Pace of 8.3% among 2020-27. Other important geographic business sectors like Japan and Canada gauge each to create at 3.4% and 5.7% separately over the length 2020-2027.Recent examination have demonstrated promising ramifications for those mixtures in assorted neurotic cerebral pains including diabetes, arthrosclerosis,

Cardiovascular afflictions (CVDs), most diseases and neurological issues. These circumstances contain many changes, along with changes redox state. The majority of nutraceuticals have cancer prevention agent movement with the ability to kill what is going on. Subsequently they're thought about as healthy reasserts of wellbeing advancement, primarily for anticipation of presence undermining afflictions including diabetes, contamination, renal and gastrointestinal issues.

II. THE REASONS FOR SHIFT TOWARDS NUTRACEUTICALS ARE ^[5,6]

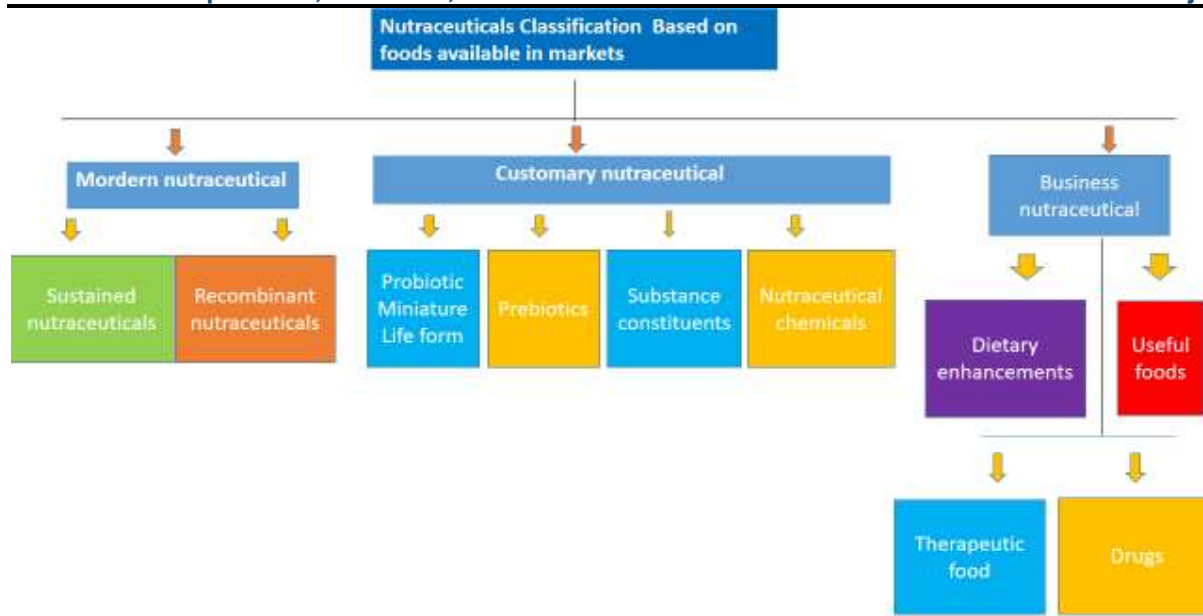
- Nutraceuticals cover the majority of the restorative regions, for example, against joint, cold and hack, dozing problems, absorption and anticipation of specific malignant growths, osteoporosis, pulse, cholesterol control, pain relievers, sadness and diabetes.
- Disappointed with drug specialists in advancing wellbeing, are going to nutraceuticals to work on their wellbeing and forestall constant infection.
- Medical care supplier perceive the way that our intensely handled food supply coming from crops developed with substance composts, pesticides, herbicides, and regularly hereditarily changed seeds, needs adequate supplements essential for ideal Health.
- Nutraceuticals show an adequate extension to thrive in future as restorative specialists with preventive and corrective properties.
- Individuals who have constant infections and have tracked down no arrangement in allopathic drugs.
- Nutraceuticals are rapidly supplanting drugs in avoidance and the board of intense and ongoing medical issues.
- financially tested patients, People trusting more in avoidance than a fix.
- Increasing numbers of consumers, concerned about medical services costs.

III. CLASSIFYING NUTRACEUTICALS ^[7,8]

They can be arranged based on their regular sources, pharmacological circumstances, as well as synthetic constitution of the items. Most frequently they are gathered in the accompanying classes: dietary enhancements, useful food, therapeutic food, drugs.

A dietary enhancement addresses an item that contains supplements got from food items, and is frequently gathered in fluid, container, powder or pill structure. Albeit dietary enhancements are managed by the FDA as food sources, their guideline varies from drugs and different food sources. The food sources utilized as nutraceuticals are generally normal and can be sorted as

- Carbs and Fiber
- Fat and Fundamental unsaturated fats
- Protein
- Nutrients
- Minerals like Large scale minerals& Minor elements
- Water and Different supplements like Cell reinforcements, Phytochemicals and Digestive bacterial greenery Recombinant.



I. MODERN NUTRACEUTICALS [9]

These are fake food varieties arranged with the assistance of biotechnology food tests contain bioactive parts which are designed to convey matter for human-wellbeing. They are organized into two sorts:

A. SUSTAINED NUTRACEUTICALS.

B. RECOMBINANT NUTRACEUTICALS.

A. SUSTAINED NUTRACEUTICALS

They are advanced with nutrients, minerals, as a rule at a ramble up to 100% of the dietary reference exhaustion for that supplement. Sustained nutraceuticals are the food with farming rearing or with added supplements. Some of the instances of sustained nutraceuticals are squeezed orange with calcium, oats with added nutrients or minerals, flour with added folic corrosive, and milk with cholecalciferol.

B. RECOMBINANT NUTRACEUTICALS

Creation of probiotics and the extraction of bioactive parts by protein/maturation advancements too as hereditary it are accomplished through to design innovation biotechnology. Energy-giving food varieties, like bread, liquor, matured starch, yogurt, cheddar, vinegar, and others are delivered with the assist

II. CUSTOMARY NUTRACEUTICALS [10, 11]

Customary nutraceuticals are proper ordinary without any gradation to the food. Food contains a few regular parts that convey benefits past fundamental sustenance, for example, lycopene in tomatoes, and omega-3 unsaturated fat in salmon or saponins in soy.

A. PROBIOTIC MINIATURE LIFE FORM

B. PREBIOTICS

C. SUBSTANCE CONSTITUENTS

D. NUTRACEUTICAL CHEMICALS

A. Probiotic Miniature life forms

They act to swarm out microbes, like yeasts, different microorganisms and infections that may some way or another reason illness and foster a commonly profitable beneficial interaction with the human gastrointestinal parcel. They have an antimicrobial impact through adjusting the micro flora, forestalling bond of microbes to the gastrointestinal epithelium, seeking supplements important for microorganism endurance, delivering an antidote result and turning around a portion of the outcomes of contamination on the digestive epithelium, like secretory changes and neutrophil relocation. Probiotics can fix lactose prejudice by the creation of the particular protein (β -galactosidase) that can hydrolyse the culpable lactose into its part sugars. Models are Yogurt is probably the best wellspring of probiotics, which are cordial microscopic organisms that can work on your wellbeing. Kefir is an older probiotic milk beverage.

B. PREBIOTICS

"Prebiotics" are a later expansion to our jargon and are substances which when consumed are not processed by us. All things being equal, they go about as a supplement hotspot for the great probiotic microbes. This urges the probiotic microscopic organisms to fill in a good climate, which thusly diminishes the possibilities that hurtful microorganisms might begin to fill in our stomach related tract. Example: Inulin is a prebiotic that has been broadly utilized in handled food varieties. Primarily, it is a kind of fiber got from the latent infrastructure of plants like chicory, Jerusalem artichoke, and even dandelions. tance of biotechnology.

C. COMPOUND CONSTITUENTS**NATURAL**

Nutraceuticals holds an incredible guarantee to further develop wellbeing and forestall ongoing illness with the assistance of herbals. A few models are Aloe Vera gel: Widens vessels, calming, emollient, injury mending properties. Ephedra: Bronchodilator, vasoconstrictor, diminishes bronchial Oedema. Garlic: Antibacterial, antifungal, antithrombotic, hypotensive calming Liquorice: Expectorant, secretolytic, treatment of peptic ulcer. Ginger: Carminative, antiemetic, cholagogue, positive inotropic.

PHYTOCHEMICALS

Phytochemicals essentially is plant supplements with specific organic exercises in supporting human wellbeing and battle against numerous unsafe sicknesses of the individuals. Models are Carotenoids (isoprenoids) found in different organic products, vegetables and egg yolk are hostile to cancer-causing, support normal executioner resistant cells and safeguard cornea against UV light. Vegetables (chickpeas and soybeans), grains, palm oil contain non-carotenoids, which eliminate cholesterol and are hostile to cancer-causing. Sulfides, found in garlic and onions, may reinforce the safe framework. Food varieties wealthy in phytochemicals incorporate apples, apricots, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, garlic, vegetables, onions, red peppers, soybeans, yams, and tomatoes.

D. NUTRACEUTICAL PROTEINS

Proteins are a fundamental piece of life, without which our bodies would stop to work. Those individuals who are experiencing ailments, for example, hypoglycaemia, glucose issues, and stomach related issues and stoutness, dispose of the side effects by chemical enhancements to their eating routine. These proteins are gotten from microbial, plant and creature sources. Models are Xylanase protein is gotten from *Trichoderma* sp. Benefits: Xylanase processes high sub-atomic weight arabinoxylans and can be utilized in the treatment of endosperm cell dividers of feed grains and vegetable proteins the expansion of Xylanase to take care of offers answers for some issues related with arabinoxylans. Papain compound is generally utilized in the Nutraceuticals business as a protease catalyst to help protein processing. They split the chains of proteins creating little peptides and at last free the amino acids, which can be consumed by the human body.

III. BUSINESS NUTRACEUTICALS ^[12, 13]

New particle is challenging to find and more costly and dangerous than any other time. Numerous drug organizations are presently attempting to produce nutraceutical on the grounds that there is without a doubt an extremely enormous and developing business sector. Acknowledgment of medical advantages from utilization of omega-3 rich shellfishes is one of the most encouraging advancements in human sustenance and illness avoidance research in the beyond thirty years.

A. DIETARY ENHANCEMENTS,**B. USEFUL FOOD,****A. DIETARY ENHANCEMENTS**

A dietary enhancement is an item that contains supplements got from food items that are amassed in fluid or container structure. Dietary enhancements, for example, the vitamin B supplement are normally sold in pill structure. In the US, the Dietary Enhancement Wellbeing and Schooling Act (DSHEA) of 1994 characterized the expression: "A dietary enhancement is an item taken by mouth that contains a "dietary fixing" planned to enhance the eating routine. The "dietary fixings" in these items might include: nutrients, minerals, spices or different botanicals, amino acids, and substances, for example, chemicals, organ tissues, glandular, and metabolites. Dietary enhancements can likewise be concentrates or thinks, and might be found in many structures, for example, tablets, cases, delicate gels, easy-swallow pills, fluids, or powders. Dietary enhancements don't need to be supported by the U.S. Food and Medication Organization prior to promoting, however organizations should enlist their assembling offices with the FDA. With a couple of obvious exemptions, dietary enhancements may just be promoted to help the design or capacity of the body, and may not profess to treat an infection or condition, and should incorporate a name that says: "These assertions have not been assessed by the Food and Medication Organization. This item isn't planned to analyze, treat, fix, or forestall any infection." it accomplishes this objective by utilizing adequacy of such nutraceuticals in detoxifying the body, staying away from nutrient and mineral insufficiencies, and reestablishing solid absorption and dietary propensity. Dietary enhancements arrive in an assortment of structures, including tablets, cases, chewy candies, and powders, as well as beverages and energy bars. Well known supplements incorporate nutrients D and B12; minerals like calcium and iron; spices like Echinacea and garlic; and items like glucosamine, probiotics, and fish oils.

B. USEFUL FOOD

Sources, as per their by and large acknowledged definition, are "any food or food fixing that may give a medical advantage past the customary supplements it contains". Utilitarian food varieties are intended to permit buyers to eat advanced food varieties near their regular state, as opposed to by taking dietary enhancements fabricated in fluid or container structure. Utilitarian food varieties have been either advanced or invigorated, a cycle called nitrification. This training reestablishes the supplement content in a food back to comparative levels from before the food was handled. Once in a while, extra reciprocal supplements are added, for example, vitamin D to drain. Wellbeing Canada characterizes utilitarian food sources as "common food that has Piece or attachments added to give it a detail clinical or physiological advantage, other than an absolutely wholesome impact. In Japan, all useful food varieties should meet three laid out prerequisites: food sources ought to be, • Present in their normally happening structure, rather than a case, tablet, or powder. • Consumed in the eating routine as frequently as every day; and • ought to direct a natural interaction with at least some expectations of forestalling or controlling sickness. Instances of useful food varieties are Natural products: berries, kiwi, pears, peaches, apples, oranges, bananas. Vegetables: broccoli, cauliflower, kale, spinach, zucchini. Seeds: chia seeds, flax seeds, hemp seeds, pumpkin seeds. C. Restorative food Restorative food plants might be characterized as those food plants whose consumed parts get acknowledgment as restorative either in conventional medication, ethno medicine, or biomedicine. An all-encompassing methodology of the idea of therapeutic food sources was drawn from the review that food sources are not planned to fulfill hunger and just give fundamental full scale and micronutrients to the body yet additionally to supply it with bioactive fixings that guide to diminish nutrition related infections and guarantee physical and mental prosperity. Conversely, nutraceutical has been characterized as "food or part of food that give clinical or medical advantages, including the anticipation and treatment of infection". The principle distinction is that nutraceuticals can be devoured in a nonfood lattice structure as pills, cases, or tablets, while utilitarian or therapeutic food sources are taken as a feature of a typical food design. A food which is formed to be devoured or then again regulated inside under the oversight of a doctor and which is expected for the particular dietary the executives of an infection or condition for which particular healthful prerequisites, in light of perceived logical standards, are laid out by clinical assessment too with next to no parts that advance sickness condition or contain a particular supplement that the body can't ordinarily produce because of explicit illness condition.

LIST OF BUSINESS NUTRACEUTICALS**PRODUCTS:**

- 1) Probiotic wraps & hummus
- 2) Vita kids bread
- 3) Splenda essentials
- 4) Greensuperfoods antioxidant & greens powder
- 5) Phenorex
- 6) Assure for heart & energy
- 7) Vectomega
- 8) Brainshiner
- 9) Fuze
- 10) Forgiven alcohol Burner

IV.NUTRACEUTICALS AND ILLNESSES

Nutraceuticals have been professed to have a physiological benefit or give assurance against the accompanying sicknesses for example, cardiovascular illness, Diabetes, Parkinson's disease.

CARDIOVASCULAR ILLNESSES ^[14-21]

(CVD) is an ongoing illness by implies of problems of the heart and veins which by and large incorporate (hypertension), coronary heart infection (cardiovascular failure), cerebro-vascular illness (stroke), cardiovascular breakdown, fringe vascular infection, and so forth In heart coronary illness, atherosclerotic plaques structure on the internal surface of conduits, which slender the lumen and diminished the blood stream. Further it would be the main source of demise in non-industrial nations. Larger part of these sicknesses would be preventable and controllable. Nutraceuticals utilized in cardiovascular sicknesses are Enemies of oxidants, Dietary strands, Omega-3 poly unsaturated fats, Nutrients, minerals for anticipation and treatment of CVD. Milk and eggs having gamma linolenic corrosive (GLA) it is a fatty acid which has many good, counting avoidance and the board of cardiovascular infections. Polyphenols (in grape) forestall and control blood vessel infections. Flavonoids (in onion, vegetables, grapes, red wine, apples, and cherries) block the Expert and increase the narrow vessels that carry oxygen and fundamental supplements to all cells.

DIABETES ^[22-280]

Diabetes mellitus is ailments caused as a result of abnormally high levels of blood glucose, either due to lacking insulin creation, or due to its inadequacy. There are two kinds of diabetes mellitus are type 1 diabetes (5%), an insusceptible framework issue, and type 2 diabetes (95%), which is related with robustness. Globally the total number of people with diabetes is projected to climb from 171 million in 2000 to 366 million out of 2003. Diet treatment is the establishment for the organization of gestational diabetes mellitus. In spleen of the way that there is compulsory use of local dietary supplements that are acknowledged to assist with composing 2 diabetes mellitus, few have been exhibited to do as such in suitably arranged randomized primers. Nutraceuticals used in diabetes are Lipoic destructive, a cell support, for treatment of diabetic neuropathology. Ethyl esters of n-3 unsaturated fats intensity be beneficial in diabetic patients. Docosahexaenoic destructive changes insulin resistance and is moreover fundamental for neurovascular improvement. Dietary fibers from psyllium have been used for glucose control in diabetic patients and to diminish lipid levels in hyperlipidaemia. Normal energizers, for instance, ephedrine, caffeine, mother huang-guarana, chitosan and green tea help in body weight decrease. People with diabetes are at higher bet of vein hurt from free progressives. Quercetin class of flavonoids called flavanols fills in as a malignant growth bar specialist by ferreting hurting morsels in the body known as free progressives.

PARKINSON'S SICKNESS ^[32, 33]

Parkinson's sickness is characterized as mind problem or engine jumble that outcomes from nerve harm in specific areas of the cerebrum causing muscle unbending nature, shaking, and troublesome strolling, ordinarily happening in mid to late grown-up life. Dietary enhancements have shown some encouraging brings about starter studies, it is critical to recall that there isn't adequate logical information to suggest them for Parkinson's illness as of now. Nutraceuticals utilized in Parkinson's sicknesses are a portion of these enhancements have shown a few promising outcomes in primer examinations. Vitamin E, glutathione, and creatine appear to be defensive against Parkinson's illness. Creatine adjusts Parkinson's illness highlights as estimated by a decrease in the clinical signs.

V. CONCLUSION

Nutraceuticals are broadly utilized in the food and drug ventures. The majority of the nutraceuticals are from either mineral beginning, creature beginning or vegetable beginning like gamma terpenes, beta carotene, curcumins, limonene, eugenol, pinene, safranal, geraniol, aloine, caryophyllene, lycopene and silymarin. These constituents are ready into measurements structures as effective, oral, and so on viz. creams, salves, treatments, emulsions, unani plans, fragrant oils, microemulsions, SMEDDS, dots, tablets, emulgels, natural details and so on utilized in different classifications as antidiabetic, anti-infection, antimicrobial, calming, hostile to disease, defensive, and so forth Nutraceuticals are rapidly supplanting drugs in avoidance and the executives of intense also, persistent medical issues. Nutraceuticals show an adequate extension to prosper in future as restorative specialists with preventive and healing properties. In spite of the fact that nutraceuticals show a promising methodology for the advancement of wellbeing and avoidance of different illnesses, yet wellbeing experts, nutritionists, toxicologists ought to decisively work in joint effort to investigate them for their maximum capacity. A beam of fix inclination in the psyche of normal patients spin around nutraceuticals on account of their misleading discernment "All regular meds are great". Likewise, a significant expense of remedy drugs and hesitance of some insurance agency to take care of the expense of medications help the nutraceuticals to set their presence in the worldwide market of treatments and remedial specialists. Utilization of nutraceuticals as an endeavor to investigate their remedial potential with least secondary effects when contrasted with ordinary drugs has noticed an extraordinary achievement and met with gigantic financial advantages. The inclination for investigation also, creation of nutraceuticals over drugs is apparent in different drug and biotechnology organizations. Nutraceuticals actually need broad logical examination to demonstrate their inclination over drugs. It can be accomplished by institution of FIM Proposed Nutraceutical Exploration and Instruction Act (NREA). It incorporates making of a Nutraceutical Commission (NUCOM) explicitly for the survey and endorsement of nutraceuticals as well as clinical exploration. According to FIM, NREA ought to investigate elite freedoms over the innovative work. Cost savvy of nutraceuticals ought to be kept inside the availability of everyday person. There is a basic need to zero in on the foundations of new skylines in nutraceutical improvement

REFERENCE

1. Kalra EK, 2003, Nutraceutical – Definition and introduction. *AAPS Pharm Sci.*;5:E25.
2. Chauhan B, Kumar G, Kalam N, Ansari SH, 2013 Current concepts and prospects of herbal nutraceutical: A review. *J Adv Pharm Technol Res.* 4:4–8.
3. Zeisel SH, *Science.* 1999 Regulation of “nutraceuticals” 285:1853–5.
4. Hardy G, 2000 Nutraceuticals and functional foods: Introduction and meaning. *Nutrition.* 16:688–9.
5. Prevesh Kumar, Nirdesh Kumar and Tushar Omer, 2016 Nutraceuticals critical supplement For building a healthy India, *World Journal Of Pharmacy And Pharmaceutical Sciences*, 5(3): 579-594.
6. Olaiya C. O, Soetan K. O, Esan A. 2016 The role of nutraceuticals, functional foods and value added food products in the prevention and treatment of chronic diseases M. 1, *African Journal of Food Science*, 10(10): 185-193.

7. Namdeo Shinde, Bhaskar Bangar, Sunil Deshmukh, Pratik Kumbhar. 2014 Nutraceuticals: A Review on current status. *Research J. Pharm. and Tech*, 7(1): 110-113.

8. Kharb S, Singh V. 2004 Nutraceuticals in health and disease prevention. *Indian J. Clin. Biochem*, 19(1): 50-53.

9. Jeroen Hugenholtz, Eddy J Smid, Victor Ladero, Pascal Hols. 2002 Metabolic engineering of lactic acid bacteria for the production of nutraceuticals. *Antonie van Leeuwenhoek*, 82: 217–235.

10. Vouloumanou EK, Makris GC, Karageorgopoulos DE. 2009 Probiotics for the prevention of respiratory tract infections: a systematic review. *Int J Antimicrob Agents*, 34:e1-e10.

11. Montrose DC, Floch MH: 2005 Probiotics used in human studies. *J Clin Gastroenterol*, 39(6): 469-484.

12. N Borkar, SS Saurabh, KS Rathore, A Pandit, KR Khandelwal; 2015 An Insight on Nutraceuticals; *Pharma Tutor*, 3(8): 13-23.

13. Enhancing Nutraceutical Performance Using Excipient Foods: Designing Food Structures and Compositions to Increase Bioavailability David Julian McClements, Liqiang Zou, Ruojie Zhang, Laura Salvia-Trujillo, Taha Kumosani, and Hang Xiao, 2015 *Comprehensive Reviews in Food Science and Food Safety*, 14: 824-847.

14. Nasri H, Motamedi P, Dehghani N, Nasri P, Taheri Z, Kinani F, et al. 2014 Vitamin D and immune system. *J Renal Endocrinol*. 1:5–7.

15. Asgary S, Kelishadi R, Rafieian-Kopaei M, Najafi S, Najafi M, Sahebkar A. Investigation of the lipid-modifying and antiinflammatory effects of *Cornus mas* L. 2013 supplementation on dyslipidemic children and adolescents. *Pediatr Cardiol*. 34:1729–35.

16. Iriti M, Faoro F. 2006 Grape phytochemicals: A bouquet of old and new nutraceuticals for human health. *Med Hypotheses*. 67:833–8.

17. Garg A, Garg S, Zaneveld LJ, Singla AK. 2001 Chemistry and pharmacology of the Citrus bioflavonoid hesperidin. *Phytother Res*. 15:655–69.

18. Rafieian-Kopaei M, Baradaran A, Rafieian M. 2013 Plants antioxidants: From laboratory to clinic. *J Nephropathol*. 2:152–3.

19. Ghayur MN, Gilani AH, Afridi MB, Houghton PJ. 2005 Cardiovascular effects of ginger aqueous extract and its phenolic constituents are mediated through multiple pathways. *Vascul Pharmacol*. 43:234–41.

20. Bahmani M, Vakili-Saatloo N, Gholami-Ahangaran M, Karamati SA, Khalil-Banihabib E, Hajigholizadeh GH, et al. 2013 A comparison study on the anti-leech effects of onion (*Allium cepa* L) and ginger (*Zingiber officinale*) with levamisole and triclabendazole. *J HerbMed Pharmacol*. 2:1–3. 21. Nasri H, Nematbakhsh M, Ghobadi SH, Ansari R, Shahinfard N, Rafieian-kopaei M. 2013 Preventive and curative effects of ginger extract against histopathologic changes of gentamicin-Induced tubular toxicity in rats. *Int J Prev Med*. 4:316–21

22. Bahmani M, Zargaran A, Rafieian-Kopaei M, Saki M. 2014 Ethnobotanical study of medicinal plants used in the management of diabetes mellitus in the Urmia, Northwest Iran. *Asian Pac J Trop Med*. 7:348–54.

23. Roshan B, Stanton RC. 2013 A story of microalbuminuria and diabetic nephropathy. *J Nephropathol*. 2:234–40.

24. Tavafi M. 2013 Diabetic nephropathy and antioxidants. *J Nephropathol*. 2:20–7.

25. Baradaran A. 2012 Lipoprotein (a), type 2 diabetes and nephropathy; the mystery continues. *J Nephropathol*. 1:126–9.

26. Rahimi-Madiseh M, Heidarian E, Rafieian-kopaei M. 2014 Biochemical components of *Berberis lycium* fruit and its effects on lipid profile in diabetic rats. *J HerbMed Pharmacol*. 3:15–9.

27. Rafieian-Kopaei M, Nasri H. 2013 Ginger and diabetic nephropathy. *J Renal Inj Prev*. 2:9–10.

28. Tolouian R, T Hernandez G. 2013 Prediction of diabetic nephropathy: The need for a sweet biomarker. *J Nephropathol*. 2:4–5.

29. Caterson ID, Gill TP. 2002 Obesity: Epidemiology and possible prevention. *Best Pract Res Clin Endocrinol Metab*. 16:595–610.

30. Rubin SA, Levin ER. 1994 Clinical review 53: The endocrinology of vasoactive peptides: Synthesis to function. *J Clin Endocrinol Metab*. 78:6–10.

31. Boozer CN, Nasser JA, Heymsfield SB, Wang V, Chen G, Solomon JL. 2001 An herbal supplement containing Ma Huang-Guarana for weight loss: A randomized, double-blind trial. *Int J Obes Relat Metab Disord*. 25:316–24.

32. Lusso JN. 2003 Targeting excessive angiogenesis with functional foods and nutraceuticals. *Trends Food Sci Technol*. 14:455–68.

33. Anwar F, Latif S, Ashraf M, Gilani AH. 2007 *Moringa oleifera*: A food plant with multiple medicinal uses. *Phytother Res*. 21:17–25.

34. Glenville M. 2006 Nutritional supplements in pregnancy: Commercial push or evidence based? *Curr Opin Obstet Gynecol.* 18:642–7.
35. Brookmeyer R, Johnson E, Ziegler-Graham K, Arrighi HM. 2007 Forecasting the global burden of Alzheimer's disease. *Alzheimers Dement.* 3:186–91.
36. Rabiei Z, Rafieian-Kopaei M, Heidarian E, Saghaei E, Mokhtari S. 2014 Effects of Zizyphus jujube extract on memory and learning impairment induced by bilateral electric lesions of the nucleus basalis of Meynert in rat. *Neurochem Res.* 39:353–60.
37. Rabiei Z, Rafieian-kopaei M, Heidarian E, Saghaei E, Mokhtari S. 2014 Effects of Zizyphus jujube extract on memory and learning impairment induced by bilateral electric lesions of the nucleus basalis of meynert in rat. *Neurochem Res.* 39:353–60.4
38. Rabiei Z, Rafieian-Kopaei M, Mokhtari S, Alibabaei Z, Shahrani M.2013 The effect of pretreatment with different doses of Lavandula officinalis ethanolic extract on memory, learning and nociception. *Biomed Aging Pathol.*
39. Nasri H, Sahinfard N, Rafieian M, Rafieian S, Shirzad M, Rafieiankopaei M. Effects of Allium sativum on liver enzymes and atherosclerotic risk factors. *J HerbMed.*
40. Willis MS, Wians FH.2003 The role of nutrition in preventing prostate cancer: A review of the proposed mechanism of action of various dietary substances. *Clin Chim Acta.*330:57–83.
41. Shirzad H, Kiani M, Shirzad M.2013 Impacts of tomato extract on the mice fibrosarcoma cells. *J HerbMed Pharmacol.* 2:13–6.
42. Stahl W, Sies H.2005 Bioactivity and protective effects of natural carotenoids. *Biochim Biophys Acta.* 1740:101–7.
43. Shirzad H, Taji F, Rafieian-Kopaei M.2011 Correlation between antioxidant activity of garlic extracts and WEHI-164 fibrosarcoma tumor growth in BALB/c mice. *J Med Food.* 14:969–74.
44. Shirzad H, Shahrani M, Rafieian-Kopaei M.2009 Comparison of morphine and tramadol effects on phagocytic activity of mice peritoneal phagocytes in vivo. *Int Immunopharmacol.* 9:968–70.
45. Limer JL, Speirs V.2004 Phyto-oestrogens and breast cancer chemoprevention. *Breast Cancer Res.* 6:119–27.
46. Grammatikos AP.2008 The genetic and environmental basis of atopic diseases. *Ann Med.* 40:482–95.
47. Kruger CL, Murphy M, DeFreitas Z, Pfannkuch F, Heimbach J.2002 An innovative approach to the determination of safety for a dietary ingredient derived from a new source: Case study using a crystalline lutein product. *Food Chem Toxicol.* 40:1535–49.
48. Chauhan B, Kumar G, Kalam N, Ansari SH.2013 Current concepts and prospects of herbal nutraceutical: A review. *J Adv Pharm Technol Res.* 4:4–8.
49. Brouns F. Soya 2002 isoflavones: A new and promising ingredient for the health foods sector. *Food Res Int.* 35:187–93.
50. 53. Ardalan MR, Rafieian. Kopaei M.2014 Antioxidant supplementation in hypertension. *J Renal Inj Prev* 3:39-40.
51. Gupta P, Andrew H, Kirschner BS, Guandalini S.2000 Is lactobacillus GG helpful in children with Crohn's disease? Results of a preliminary, open-label study. *J Pediatr Gastroenterol Nutr.* 31:453–7.
52. Fuller R.1991 Probiotics in human medicine. *Gut.* 32:439–42.
53. Rafieian-Kopaei M.2014 Identification of medicinal plants affecting on headaches and migraines in Lorestan Province, West of Iran. *Asian Pac J Trop Med.* 7:376–9.
54. Jang M, Cai L, Udeani GO, Slowing KV, Thomas CF, Beecher CW, et al.1991 Cancer chemopreventive activity of resveratrol, a natural product derived from grapes. *Science.* 75:218–20.
55. Rouhi-Broujeni A, Heidarian E, Darvishzadeh-Boroojeni P, RafieianKopaei M, Gharipour M.2013 Lipid lowering activity of moringa pergerina seeds in rat: A comparison between the extract and atorvastatin. *Res J Biol Sci.* 8:150–4.
56. Nasri H, Ardalan MR, Rafieian-Kopaei R.2014 On the occasion of world hypertension day . *J Parathy Dis.* 2:19–20.
57. Baradaran A, Madihi Y, Merrikhi A, Rafieian-Kopaei M, Nematbakhsh M, Asgari A, et al.2013 Nephrotoxicity of hydroalcoholic extract of Teucrium polium in Wistar rats. *Pak J Med Sci.* 29:329–33.
58. Ateyyat MA, Al-Mazra'awi M, Abu-Rjai T, Shatnawi MA. 2009 Aqueous extracts of some medicinal plants are as toxic as Imidacloprid to the sweet potato whitefly, Bemisia tabaci. *J Insect Sci.* 9:15.
59. Baradaran A.2012 Beyond mineral metabolism, the bright immunomodulatory effect of vitamin D in renal disease. *J Nephropharmacol.* 1:17–8.
60. Nasri H, Behradmanesh S, Ahmadi A, Rafieian-Kopaei M.2014 Impact of oral vitamin D (cholecalciferol) replacement therapy on blood pressure in type 2 diabetes patients; a randomized, double-blind, placebo controlled clinical trial. *J Nephropathol.* 3:29–33.
61. Nasri H, Shirzad H.2013 Toxicity and safety of medicinal plants. *J HerbMed Plarmacol.* 2:21–2.

62. Heidarian E, Rafieian-Kopaei M. 2013 Protective effect of artichoke (*Cynara scolymus*) leaf extract against lead toxicity in rat. *Pharm Biol.* 51:1104–9.

63. Nasri H, Ahmadi A, Baradaran A, Nasri P, Hajian S, Pour-Arian A, et al. 2014 A biochemical study on ameliorative effect of green tea (*Camellia sinensis*) extract against contrast media induced acute kidney injury. *J Renal Inj Prev.* 3:47–9. +

