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Role of Nutaceuticals on Health Promotion and Disease Prevention: A Review

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Abstract: *The term **"Nutraceutical"** combines the two words of "nutrient," which is a nourishing food component, and "pharmaceutical," which is a medical drug. The name was coined in 1989 by **Stephen DeFelice.** The philosophy behind nutraceuticals is to focus on prevention, according to the saying by a Greek physician Hippocrates (known as the father of medicine) who said **"Let Food Be Your Medicine".** These were used as alternative to modern medicines that promote quality of health, increases nutritive value of the diet and prolongs life expectancy. Major constituents of the nutraceuticals are herbals, various nutrients and dietary supplements are involved in preventing different diseases and minimizing pathophysiology of the disease too. These nutraceuticals help in combating some of the major health problems of the century such as obesity, cardiovascular diseases, cancer, osteoporosis, arthritis, diabetes, cholesterol etc. In whole, 'nutraceutical' has lead to the new era of medicine and health, in which the food industry has become a research oriented sector. The principal reasons for the growth of the nutraceutical market worldwide are the current population and the health trends.*

Figure: Nutraceuticals

Keywords: Nutraceuticals; Disease prevention; Health promotion; Nutrients; Nutrition.

I. INTRODUCTION

Nutraceuticals are the substances that are usually non-patentable. Both pharmaceutical and nutraceuticals are used to cure or prevent diseases. Themotto of nutritional therapy is based on the complimentary therapy with nutraceuticals as food is not only the source of energy and nutrients but also provides medicinal benefits. Nutraceuticals are the substances that are usually non-patentable. Both pharmaceutical and nutraceuticals are used to cure or prevent diseases but the pharmaceutical compounds require governmental sanction (Nasri et al., 2014). The nutraceuticals products are mainly categorized as functional food, functional beverages and dietary supplements.

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II. NUTRACEUTICAL FOR HEALTH PROMOTION

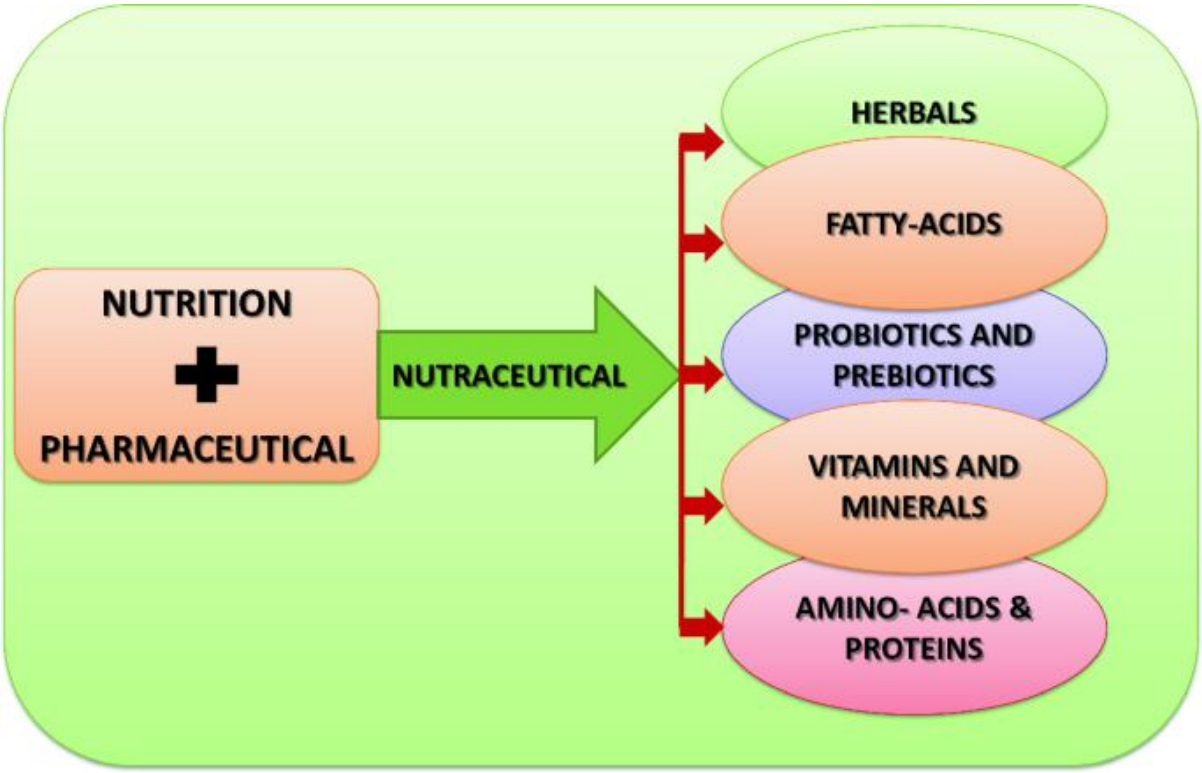
The Nutraceuticals inherently contain ingredients with nutritional, safety and therapeutic effects. Minerals, Vitamins, herbs, omega 3 fatty acids etc. are considered as nutraceuticals

The herbal teas contain antioxidants which improve digestion and tomato contains lycopene that reduces the risk of prostate carcinogenesis.

Soybean and cow milk are the main sources of well balance nutrients (Catinean et al., 2018). Minerals present in milk are good resource for bone health and helps in functioning of body cells that influence digestion.

Now the question arises whether nutraceuticals are foods or drugs?

It may be considered as food, food supplement or drug like agent since it may apply for health promotion, disease prevention and adjunct supplement with the treatment. Nutraceuticals creates a new era of research to promote quality of life. It can reduce the risk of disease onset by retaining normal health condition and improving immunity .



Nutraceutical	Health promoting activity
Onion ,garlic, grapes ,broccoli etc	Antioxidant acitivity.
Flavonoids ,polyphenols,probiotics	Gastrointestinal health
Magnesium citrate,pygeum,IP6 etc	Renal and excretory health
Blurberry,green tea ,carnosine etc	Steam cell growth
Vit.B6,vit.B12,flax seed,fish oil	Reproductive health
Citrus food ,soyabean,caffeic acid	Prolonging life span

Table 1: Role of Nutraceutical in health promotion

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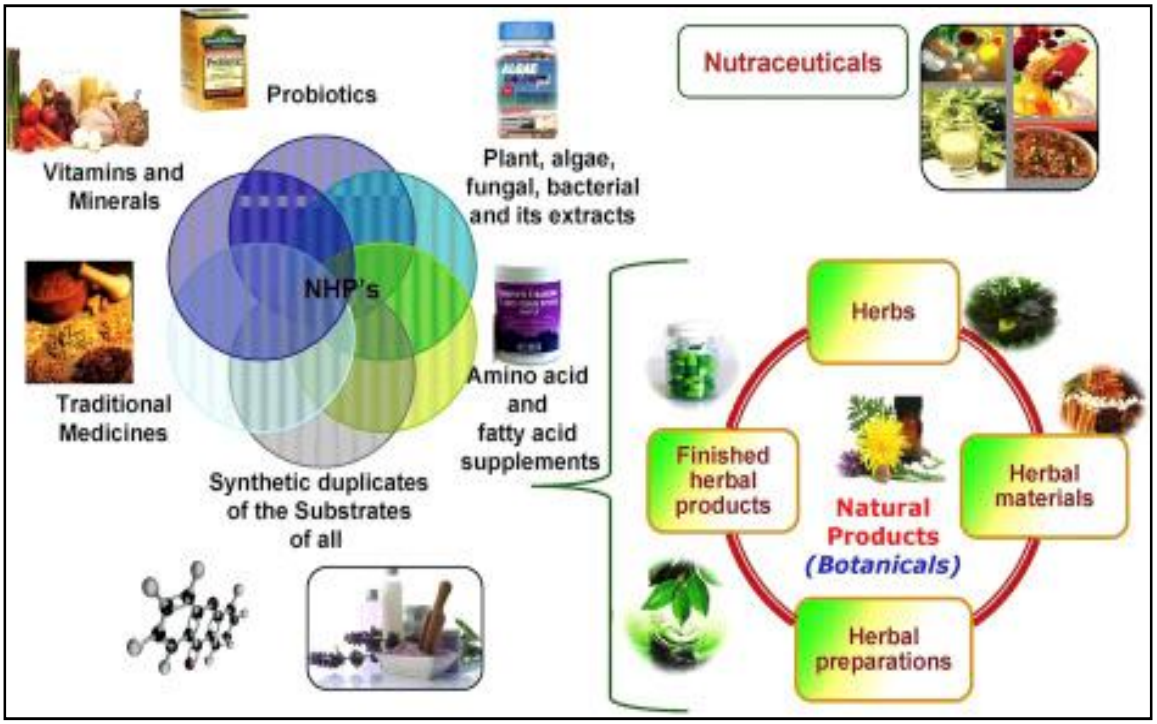

Figure: Role of Nutraceutical In Health Promotion

Nutraceuticalinheretently contain ingredients with nutritional safety and therapeutic effects .minerals vitamins herbs omega 3 fatty acids are considered as nutraceuticals .this food items may improve health and postpone the ageing process.

Omega 3 and omega 6 fatty acid have several health benefits that they boost immunity ,increase metabolism and posses anti inflammatory property.

A dietary supplement are product administered through mouth that contain a dietary ingredients intended to add something to the foods you eat. As define by the dietary supplements health and education act [DSHEA],1994." A product that contain one or more of the dietary ingredients such as vit. Minerals herbs or other botanical and amino acids [proteins] also includes any possible components of diet as well as concentrates ,constituents ,extracts or metabolites of these compounds.

Vitamins are usually administered as nutraceuticals as they are essential for the body to function normally.vit. A improve skin health and is important for night vision. Vitamins C, Vit E and caratenoids are collectively known as anti oxidant vitamins as they protect body from free radicals.

Spices and herbs have been use for centuries to enhance the aroma, flavour, and colour of food . several spices and herbs are also known for their medicinal and healing property .the nutraceutical industry is exploring and leveraging the health benfits of spices and herbs.

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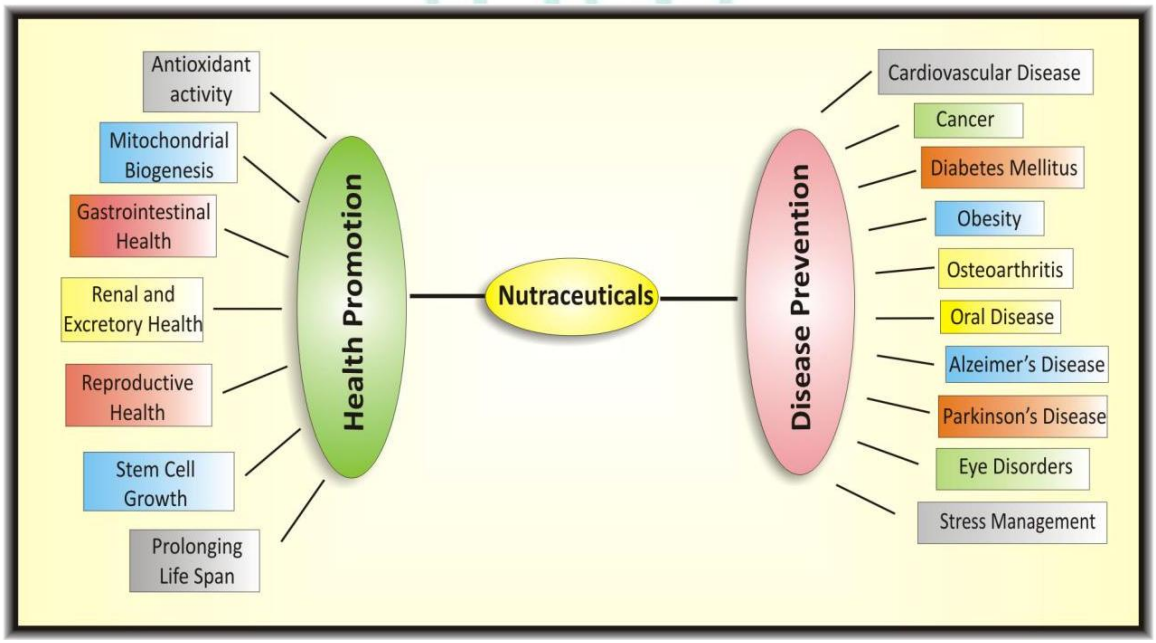

III. ROLE OF NUTRACEUTICAL IN DISEASE PREVENTION

- **CANCER**: Nutraceutical rich bioactive dietary components have the ability to prevent cancer .nutraceutical controls DNA damaging factors in cell and prevents DNA transcription in tumours. Beta carotene from yellow and orange fruits has anti cancer activity .cruciferous vegetables lower the chances of colorectal and lung cancer. They block enzyme that promote tumour growth.
- **DIABETES**: soy isoflavons ,omega 3 fatty acids lowers mortality and incident of diabetes ,promote insulin sensitivity, reduce glucose tolerance and bring blood sugar normal. Bittermelon, pomegranates are good for diabetes which regulates metabolism and transports glucose from the blood into cells. Caffeic acid reduces elevated plasma glucose in insulin resistant patients.
- **PARKINSON'S DISEASE:** the dopamine releasing cells in the brain damage due toneurode generation. Herbal nutraceuticals [brahmi] is a natural brain tonic that helps mental peace and relaxation, migrane, headach, insomnia ,depression, anxiety, improve memory function and harmone secretion.
- **CARDIOVASCULAR DISEASE :**Nutraceuticals like flavonoids, flavones, flavonones, cruciferous vegetables, black berries, cherries, berries, apples and minerals may reduce the risk of death from CVDs. They prevent platelet aggregation and stickiness. Polyphenols present in grapes alter cellular metabolism and signaling which reduces arterial diseases. CVD could be managed by the supplementation of different lipid lowering nutraceuticals along with maintenance of proper life style.
- **OSTEOARTHRITIS:** Osteoarthritis (OA), a debilitating joint disorder, is the most common form of arthritis in the United States, where it affects an estimated 21 million people. In 2004, the direct and indirect health care costs associated with all forms of arthritis were approximately 86 billion dollars. Joint discomfort from OA and other joint disorders may reduce physical activity in individuals experiencing this condition, resulting in energy imbalance and weight gain. Increased weight can exacerbate existing problems, through additional stress on joints46Glucosamine (GLN) and chondroitinsulfate (CS) are widely used to alleviate symptoms of OA. These nutraceuticals have both nutrient and pharmaceutical properties and seem to regulate gene expression and synthesis of NO and PGE2, providing a plausible explanation for their antiinflammatoryactivities47 .
- **NUTRACEUTICAL IN STEM CELL THERAPY**: Recently the application of stem cell research is found to be significant in curing various diseases. Some researchers also have investigated the effects of certain

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nutraceuticals on stem cell growth and proliferation which could stimulate endogenous stem cells to reach healing and regenerating goals, as an alternative to stem cell transplantation. Effect of blueberry, green tea, catechin, carnosine, and vitamin D3 on proliferation with human bone marrow as compared with human granulocyte macrophage colony-stimulating factor, and combinations of nutrients can synergistically promote proliferation of human hematopoietic progenitors, suggesting another potential role or mechanism by which nutraceuticals promote health and healing capability of human body 37 . There are indications for some beneficial effects of nutraceuticals such as antioxidant vitamins, essential amino acids, and polyunsaturated fatty acids in infant foods on the developing immune response.

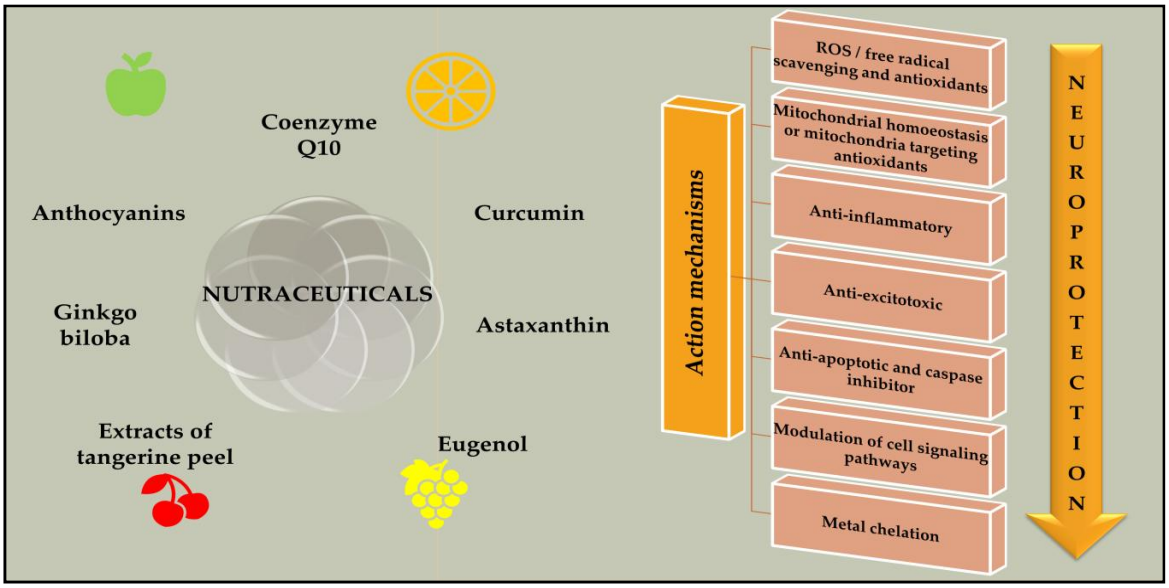

Figure: Role of Nutraceutical in health prevention

Nutraceuticals	Disease prevention
Flovanois, flavons, blackberry, cherry, apples, allicin, cruciferous vegetables.	Cardiovacular disease
Ginseng ,beta carotene ,sulphur compound in garlic,	Cancer
Omega 3 fatty acid, lipoicacid, catechin, fenugreek, cinnamon	Diabetes mellitus
Curcumin, lutein, lycopene, betacarotene, folic acid, vit.B12	Alzhimer disease
Plant poly phenols, soyabean, vit.C, vit.D, Unsaturated fatty acid, brahmi, andinosine	Parkinson's disease
Adaptogens,(ginseng, L theanine, rhodiola etc	Stress management
Vit.E, green tea, caratenoids, DHA, lutein etc.	Eye disorder

Table 2: Role of nutraceutical on disease prevention

IV. THE FUTURE OF NUTRACEUTICALS

The expanding nutraceutical market indicates that end users are seeking minimally processed food with extra nutritional benefits and organoleptic value. Its tremendous growth has implications for the food, pharmaceutical, healthcare, and agricultural industries Manyscientists believe that enzymes represent another exciting frontier in nutraceuticals. " Fermentation technology usingmicrobes to create new food products also represents potential. Global trends to healthy products cannot be reversed. Companies taking the lead by investing strategically in science, product development, marketing and consumer education will not go unrewarded. Nutraceuticals supplied through oral transdermal delivery system would provide well targeted health benefits with optimal bioavailability. With the evolution of "Smart Nutraceuticals", a Futuristic "Physician's Desk Reference" would contain information on individual genetic profiles to be matched with specific nutritional interventions as well. This would be a vast improvement over current nutritional recommendations which being too generalized are reported to benefit only 60% of population.

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V. CONCLUSION

Nutraceuticals have significant promise in the promotion of human health and prevention of disease they are widely accepted by all age group due to their safety ,higher quality, purity, efficacy health promoting and disease curing activities. The newest trend is move towards nutraceuticals lead to new era of medicine and health. In order to have significant knowledge about the nutraceuticals ,public should be educated and recommended daily doses of these nutraceuticals should be known by each consumers.

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REFERENCES

[1]. Ball, D. (2003). Foods of the Future May Be Tailored to Fit. Wall Street J. Jan 23, 2003.
[2]. Dutta, S., Ali, K.M., Dash, S.K. and Giri, B. (2018). Role of nutraceuticals on health promotion and disease prevention: A review. Journal of Drug Delivery and Therapeutics 8:42-47. Available at: https://doi.org/10.22270/jddt.v8i4.1759.
[3]. RajKK.Nutraceutical and Functional Food as Future Food: A Review. Scholars Research Library 2010; 2(1):106-116
[4]. Biesalski HK. Nutraceuticals: the link between nutrition and medicine. In: Kramer K, Hope PP, Packer L. Editors.Nutraceuticals in health and disease prevention. New York: Marcel Deckker Inc 2001; 1-26
[5]. Nasri, H., Baradaran, A., Shirzad, H. and Rafieian-Kopaei, M. (2014). New Concepts in Nutraceuticals as Alternative for Pharmaceuticals. International Journal of Preventive Medicine 5:1487-1499.
[6]. Pandey, M., Verma, R.K. and Saraf, S.A.(2010).
[7]. Gennero L, Mortimer P, Sperber K, Carloni G, Ponzetto A. Stem cells: an alternative to organ transplantation in chronic, degenerative and infectious diseases. New Microbiol 2006; 29: 151-67.
[8]. Bickford PC, Tan J, Shytle RD, Sanberg CD, El-Badri N, Sanberg PR. Nutraceuticals synergistically promote proliferation of human stem cells. Stem Cells Dev 2006;15:118-23.
[9]. Mythri RB, Joshi AK, Mukunda M, Bharath S. Bioactive nutraceuticals and dietary supplements in neurological and brain disease. Academic Press 2015; Pp. 421-431.
[10]. Stephen D. A report of National Nutraceutical Centre. Nutraceuticals India 2012. Webinar 2012; 1-22.
[11]. Cencic A, Chingwaru W. Antimicrobial agents deriving from indigenous plants. RPFNA 2010; 2:83-92.
[12]. Hu FB, Willett WC. Optimal diets for prevention of coronary heart disease. JAMA. 2002; 288(20):2569-2578.
[13]. Patil CS. Current trends and future prospective of nutraceuticals in health promotion. BIOINFO Pharmaceutical Biotechnology 2011; 1(1):1-7.
[14]. Dillard CJ, German JB. Phytochemicals: nutraceuticals and human health. Journal of the Science of Food and Agriculture 2000; 80:1744–1756.
[15]. Cicero AFG, Colletti A, Bajraktari G, Descamps O, Djuric DM, Ezhov M, et. al. Lipid-lowering nutraceuticals in clinical practice: position paper from an International Lipid Expert Panel. Archives of Medical Science 2017; 13(5):965-1005.
[16]. Kaur S. Free radicals and antioxidant (nutraceuticals).Book to human health. International Journal of Natural Product Science 2012; 1:175
[17]. Kelsey NA, Wilkins HM, Linseman DA. Nutraceuticals antioxidant as novel neuroprotective agents. Molecules 2010; 15:7792-7814.
[18]. Biddle J, Dasgupta-O'Brien S, Walch A. Gut Health, Asheville Integrative Medicine (undated). Available online: http://www.docbiddle.com/moreinfo/guthealth.pdf.
[19]. Sarin R, Sharma M, Singh R, Kumar S. Nutraceuticals: Review. International Research Journal Pharmacy 2012; 3(4):95-99.
[20]. Nutrition and medicine. In: Kramer K, Hope PP, Packer L. Editors. Nutraceuticals in health and disease

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prevention. New York: Marcel Deckker Inc 2001; 1-26.

[21]. Wargovich MJ, Morris J, Brown V, Ellis J, Logothetis B, Weber R. Nutraceutical use in late-stage cancer. Cancer and Metastasis Reviews 2010; 29(3):503-510.

[22]. Dillard CJ, German JB. Phytochemicals: nutraceuticals and human health. Journal of the Science of Food and Agriculture 2000; 80:1744–1756.

[23]. Biesalski HK. Nutraceuticals: the link between 16. Cicero AFG, Colletti A, Bajraktari G, Descamps O, Djuric DM, Ezhov M, et. al. Lipid-lowering nutraceuticals in clinical practice: position paper from an International Lipid Expert Panel. Archives of Medical Science 2017; 13(5):965-1005.

[24]. Klatte ET, Scharre DW, Nagaraja HN, Davis RA, Beversdorf DQ. Combination therapy of donepezil and Vitamin E in Alzheimer disease. Alzheimer Disease and Associated Disorder 2003; 17(2):113-116

[25]. Ji H, Zhang H. Multipotent natural agents to combat Alzheimer's disease. Functional spectrum and structural features. Acta Pharmacologica Sinica 2008; 29:143-151