

The Antiseptic

Estd. 1904

A MONTHLY JOURNAL OF MEDICINE AND SURGERY

Indexed in
IndMED

Email: admin@theantiseptic.in / subscription@theantiseptic.in

www.theantiseptic.in

Vol. 120 • No. 06

JUNE 2023

ISSN 0003-5998 • ₹ 100

With Best Complements From

The House of

CARMOZYME
Generation after Generation

Catarex^{LS}

Stable Mucolytic With Bronchodilator

Ambroxol 30 mg + Levosalbutamol 1 mg + Guafenesin 50 mg

AMIRID

Ornidazole 250mg + Dioxanide Furoate 375mg + Simethicone 25mg

Tablets

GrowLy[®]

Lysine 375mg with Vitamin B complex (oral)

SYRUP



MENDINE PHARMACEUTICALS PVT. LTD.

For more details related to products, please follow our website:

www.mendine.com

Nutraceuticals As Adjunctive Therapy

SANJAY AGRAWAL

INTRODUCTION

Dr. Stephen L. DeFelice, founder and chairperson of the Foundation of Innovation Medicine Crawford, New Jersey, coined the term "Nutraceutical" from "Nutrition" and "Pharmaceutical" in 1989¹. Health Canada defines nutraceutical as: a product isolated or purified from foods, and generally sold in medicinal forms not usually associated with food and demonstrated to have a physiological benefit or provide protection against chronic disease. Nutraceuticals may be used to improve health, delay the aging process, prevent chronic diseases, increase life expectancy, or support the structure or function of the body. Nutraceuticals are supplements which are used for health purposes other than nutrition.

Recent studies have demonstrated that free radical- induced cellular injury and inflammation are the two major pathologies involved in development of chronic disorders such as diabetes, cardiovascular diseases (CVDs), cancer, and neurological disorders. A number of different vitamins, minerals and phytochemicals have anti-oxidant and anti-inflammatory actions. Vitamins, minerals and phytochemicals having beneficial actions in the management of diabetes, CVDs and Alzheimer's disease are briefly described below.

ALZHEIMER'S DISEASE AND NUTRACEUTICALS

Alzheimer's disease (AD) is a slowly progressive neurodegenerative

disorder, characterized by deposition of amyloid beta, neurofibrillary tangles, astrogliosis and microgliosis, leading to neuronal dysfunction and loss of higher mental functions. Biochemical and histochemical evidence suggests a pivotal role of central and peripheral inflammation due to free radicals in its aetiopathogenesis.² Approximately 10-15% of people aged 65 or older and 35% of those 85 years and older suffer from AD. It is predicted to affect 1 in 85 people globally by 2050.³

Studies have shown that the antioxidant, anti-inflammatory, anti-amyloidogenic, neuroprotective, and cognition enhancing effects of curcumin, bacosides, lutein, lycopene, resveratrol, green tea, Ginkgo biloba, blueberries and omega-3 fatty acids may help in preventing onset or delaying the progression of AD⁴

Several studies in humans have shown a lower risk of dementia in subjects drinking moderate amounts of red wine when compared to abstainers⁵. Furthermore, a small clinical trial in healthy adults showed an increase of cerebral blood flow during cognitive tasks in subjects treated with resveratrol compared to placebo⁶.

Vitamin B1, B6, B12, folic acid, zinc, selenium and copper supplementation is also known to improve cognitive functions⁷.

Flavonoids induce changes in cerebral blood flow, upregulate antioxidant enzymes and proteins involved in synaptic plasticity and neuronal repair⁸ and inhibit neuropathological processes in brain regions typically involved in AD pathogenesis⁹.

Astaxanthin, a carotenoid mainly present in seafood, has been shown to have antioxidant

and anti-inflammatory properties as well as protective functions in microcirculation and in mitochondrial functions¹⁰, suggesting a potential efficacy in several neurodegenerative diseases, including AD¹¹.

Both carnosic and rosmarinic acid showed a neuroprotective action both in in vitro models of neuronal death and in in vivo models of neurodegeneration. They scavenge reactive nitrogen species. They significantly alleviate memory impairment associated with A β neurotoxicity in AD and significantly delay the onset of the disease¹².

CARDIOVASCULAR DISEASES AND NUTRACEUTICALS

The term cardiovascular disorders (CVDs) includes chronic disorders such as coronary artery disease (CAD), stroke, hypertension, heart failure, peripheral vascular diseases and others. In recent times, the prevalence of CVDs is steadily increasing due to unhealthy lifestyle. It is believed that low intake of vegetables and fruits is one of the reasons for increasing prevalence of CVDs. Many studies have reported a protective role for a diet rich in vegetables and fruits against CVDs. Nutraceuticals in the form of vitamins, minerals, antioxidants, dietary fiber, omega-3 polyunsaturated fatty acids (n-3 PUFAs), polyphenols and flavonoids are all known to have cardio-protective actions. Food items rich in these nutrients together with regular physical exercise are recommended for prevention and treatment of CVDs.

Vitamin D, Vitamin C, Vitamin E, tocotrienols, alpha lipoic acid, curcumin, phytosterols, flavonoids, polyphenols and ginger, all have cardio-protective actions.¹³

Dr. Sanjay Agrawal,
Leading Pharmaceutical Consultant and
Editor-in Chief of IJM Today
Post Graduation Diploma in Naturopathy and
Yoga,
6/146, Malviya Nagar, Jaipur -302017 Rajasthan

Specially Contributed to "The Antiseptic"
Vol. 120 No. 06 & P : 9 - 10

Omega-3 fatty acids seem to have multiple cardio-protective properties with no significant drug interactions. The suggested mechanisms associated with the benefits of O3FA are stabilization of atherosclerotic plaque, improving lipid profile, normalizing blood pressure, and anti-inflammatory and anti-arrhythmic properties¹⁴.

Resveratrol is well-studied for its free radical scavenger and antioxidant properties. It can modulate various intracellular signal transduction pathways and demonstrate therapeutic effects, including cell survival, modulation of apoptosis, and angiogenesis¹⁵.

DIABETES AND NUTRACEUTICALS

Diabetes mellitus (DM) is the most common metabolic disorder resulting from a defect in insulin secretion, insulin resistance or both. It is the third leading cause of morbidity and mortality, after heart attack and cancer. Besides diet modification, regular physical exercise, weight management and oral as well as injectable anti-diabetic drugs, a number of different nutraceuticals are recommended in the management of diabetes¹⁶.

A number of different plants contain numerous chemical compounds having blood glucose lowering effect. These phytochemicals include alkaloids(berberine), amino acids, amines and carboxylic acid derivatives, anthranoids, carbohydrates(Glucomannan,aloe vera), glycosides(Gymnemic acid and gymnemosides from *Gymnema sylvestre*, and astragaloside II from *Morus alba*), flavonoids(epigallocatechin gallate (EGCG), epigallocatechin (EGC), epicatechin, catechin and quercetin extracted from *Camellia sinensis*), minerals (zinc,magnesium), vitamins (vit. D, vit.E, carotenoids) and inorganic compounds, peptidoglycans (fenugreekine (extract of *Trigonella foenum graecum*),

inulin, taraxacosides (extract of *Taraxacum officinale*) and glucosamines (extract of *Aloe*

vera), polyphenol and its derivatives (curcuminoids) and saponins (gymnemic acid IV, extract of *Gymnema sylvestre*) and diosgenin from *Trigonella foenum graecum*.¹⁷

Several medicinal plants have the potential to lower HbA1c and could be effective as an adjunct to other lifestyle measures and current pharmaceutical treatment. Clinical studies have shown that *Aloe vera*, *Psyllium fibre*, *Fenugreek seeds* and *Nigella sativa seeds* significantly lower HbA1c¹⁸.

Omega-3 fatty acids have been suggested to reduce glucose tolerance in patients predisposed to diabetes. A beneficial effect of n-3 PUFA supplementation on waist circumference, glucose, HbA1c, leptin, leptin/adiponectin ratio, and lipid profile, without significant changes in adiponectin, and increases in resistin, insulin, and HOMA-IR has also been demonstrated¹⁹.

Alpha Lipoic Acid (ALA) is known to have antioxidant, anti-inflammatory and insulin sensitizing actions. Supplementation with ALA is shown to improve control of diabetes and it also relieves symptoms of diabetic neuropathy²⁰

Supplementation with psyllium, a rich source of soluble and insoluble dietary fibers, lowers post-prandial blood glucose and serum cholesterol levels in diabetics.²¹

CONCLUSION

Nutraceuticals offer an effective, safe and economical option in management of chronic lifestyle disorders. Adjunctive therapy with nutraceuticals may improve disease control by supplementing conventional treatment with pharmaceutical drugs. Additional evidence proving their efficacy and safety should be generated by clinical trials to evaluate their role in the management of chronic lifestyle disorders.(Ref.22).

As with other chronic diseases, the earlier during disease development the intervention starts, the better are the chances for improvement. Therefore, in addition to an overall healthy lifestyle, increased consumption of

the discussed nutraceuticals might be an effective strategy to delay the onset and/or prevent progression of chronic lifestyle disorders.

REFERENCES

1. Kalra Ekta K., Nagpur College of Pharmacy, India in Nutraceutical - Definition and Introduction, Academy of Pharmaceutical Sciences 2003; 25.
2. CNS & Neurological Disorders - Drug Targets, 2014, 13, 000-000.
3. Massoud F, Gauthier S. Update on the pharmacological treatment of Alzheimer's disease. *Current Neuropharmacol* 2010; 8(1): 69.
4. *Molecules* 2021, 26, 415. <https://doi.org/10.3390/molecules26020415>.
5. Truelsen et al., *Neurology* 2002; 59, 1313-1319.
6. Kennedy et al., *Am. J. Clin. Nutr.* 2010; 91, 1590-1597
7. Malouf and Areosa Sastre, *Cochrane Database Syst. Rev.* CD004326.2009.
8. Mann et al. *Cardiovasc. Res.* 2007;75, 261-274.
9. Wang et al., *J. Neurosci.* 2008;28,6388-6392.
10. Kidd, *Altern. Med. Rev.* 2011;16, 355-364.
11. Barros et al., *Nutrients* 2014;6, 1293-1317.
12.). Shimojo et al., *J.Neurosci. Res.*2010; 88, 896-904.
13. Joe W.E. Moss et al. *Molecular Basis of Disease* 2018;1864 : 1562-1572.
14. Delgado-Lista J, Perez-Martinez P, et al. Long chain omega-3 fatty acids and cardiovascular disease: a systematic review. *Br J Nutr* (2012) 107(Suppl 2):S201-13.
15. Nie S, Xing Y, Kim GJ, Simons JW. Nanotechnology applications in cancer. *Annu Rev Biomed Eng* (2007) 9:257-88.
16. Hui H, Tang G and Go VL. Hypoglycemic herbs and their action mechanisms. *Chin Med* 2009; 12: 4-11.
17. Bharti SK, Krishnan S and Kumar A. Phytotherapy for diabetes mellitus: back to nature. *Minerva Endocrinol* 2016; 41: 143-146.
18. *Frontiers in Pharmacology* November 2021 | Volume 12 | Article 777561.
19. M. Gorety Jacobo-Cejudo et al *Nutrients* 2017, 9: 573;2-11.
20. Saeid Golbidi , Mohammad Badran and Ismail Laher. *Frontiers in pharmacology* Review article published: 17November2011.
21. Roger D Gibb et al. *Am J Clin Nutr* 2015;102:1604-14.
22. *Ther Adv Endocrinol Metab* 2018, Vol. 9(3) 81-100. ♦