



International Journal of Homoeopathic Sciences

E-ISSN: 2616-4493
P-ISSN: 2616-4485
www.homoeopathicjournal.com
IJHS 2021; 5(2): 159-161
Received: 13-02-2021
Accepted: 15-03-2021

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Ginkgo biloba mother tincture: A panacea for the aging brain

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DOI: <https://doi.org/10.33545/26164485.2021.v5.i2c.377>

Abstract

The expectations about aging have considerably changed from those of previous generations. Everyone wants to live their life to the fullest without diseases or disabilities. Increased longevity in developing and developed world has led to rise in the incidence of geriatric problems. Cognitive shifts and other neurological complaints are the most troublesome problems faced by older people over 65. This is the time when Homoeopathy comes into play. Ginkgo biloba, a herb used in the mother tincture form in Homoeopathy can do wonders in geriatric brain diseases and disorders.

Keywords: brain, ginkgo biloba, homoeopathy

Introduction

Physiological aging starts after 60 years of age. As we get old, what reminds us of our age are the greying hair, wrinkled skin, stiff joints and so on. Along with these visible changes, our brain and nervous system are also going through the aging process. Some of the common neurological disorders that affect geriatric age group include strokes, Neuropathy, Alzheimer's disease, Parkinson's disease, cancer and so on. Fortunately, there are some preventive measures which can be adopted in our life which can prevent or bring down the chances of having strokes and other neurological problems, like quitting smoking, controlling high blood pressure and high cholesterol, maintaining healthy body weight, daily exercise etc. Along with these, if we can trust a herb as an answer to many problems of the old age, it will really be a help for these ailing people. One such Homoeopathic mother tincture is Ginkgo biloba.

Aging and brain

Aging process starts with molecular changes like accumulation of mutations, telomere attrition and epigenetic alterations leading to genomic instability. All these lead to morphological and functional deterioration of the brain like progressive neuronal loss, loss of neurotransmitters, inflammations, reduced integrity of blood vessels leading to infarctions and its aftereffects. Reduced efficiency of DNA repair leads to age-related neoplasia. Malnutrition and malabsorption in old age lead to deficiency of Vitamins B12 and Folic acid which are essential in homocysteine metabolism needed to prevent vascular damage^[1].

Common neurological disorders in old age

Stroke-it is one of the leading causes of disabilities and mortality all over the world. It reduces the quality of life in the elderly. Motor impairment is the most common deficit after stroke, either due to the lack of signal transmission from cerebral cortex or due to cerebral injuries or muscle atrophy. A one third of the stroke survivors can have cognitive impairment. Language disorders, fatigue, depression and apathy can also occur. Bladder and bowel dysfunction are also common after stroke^[2].

Epilepsy-it is the third most common neurological disorder affecting old age after stroke and dementia. The most common cause of epilepsy in old age is stroke related seizure followed by dementia and tumours^[3].

Dementia-Dementia is a syndrome in which there is deterioration in memory, thinking, behavior and the ability to perform daily activities. Alzheimer's disease is the most frequently found form of dementia and contributes to 60-70% of cases, the others being brain injuries, stroke and other diseases affecting the brain. Dementia is one of the causes of disability and dependency in old-age^[4].

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Alzheimer's disease-it is a neurodegenerative disorder marked by cognitive and behavioral impairment that significantly interferes with social and occupational functioning. It begins as memory loss, confusion, difficulty in performing daily activities, problems in judgment and decision making, loss of spontaneity and sense of initiative, progressing to severe forms ,the patient becoming completely dependent ^[5].

Parkinson's disease-One of the most common neurologic disorders, affecting about 1% of individuals older than 60 years. The diagnostic features of Parkinson's disease are resting tremor, rigidity and bradykinesia ^[6].

Brain tumour-The incidence of primary brain tumors is highest in elderly patients. The problem with old age people in the treatment of brain tumours is that they have multiple comorbidities and polypharmacy, decreased tolerance to chemotherapy and an increased risk for radiation induced neurotoxicity ^[7].

Ginkgo has been used in traditional Chinese medicine. Its extract has been popular in many countries for its memory enhancing properties and its chemical constituents are under investigation as a treatment for Alzheimer disease ^[8].

It is found wild only in China, but cultivated across the world. Its seeds are used in traditional Chinese food. They believe them to have health benefits and have aphrodisiac qualities. Its first use as a medicine is recorded in the 15 th century in China, and in Germany, it was first used in 1965. Clinical trials support the extract's efficacy in Alzheimer's disease. Herbally, it is indicated for the circulatory system and the brain. It is a well known brain tonic that improves the cerebral blood flow and helps treat and prevent problems with memory, senility and mental dullness ^[12].

Extracts of Ginkgo leaves contain phenolic acids, proanthocyanidins, flavonoid glycosides, biflavones, alkylphenols and polyphenols ^[9].

Pharmacological action of Ginkgo biloba

It has antioxidant properties, that is, studies reveal that it can inhibit the generation of free radicals. The levels of glutathione and superoxide dismutase decrease with age. Glutathione is an antioxidant produced by cells.

It is important in many biological functions like membrane transport, detoxification of xenobiotics (a chemical compound foreign to a biological system, eg. drugs, drug metabolites, environmental pollutants etc. ^[11]) and protection of cells from free radicals ^[10]. Superoxide dismutase is an enzyme that alternately catalyzes the dismutation of the superoxide radical into ordinary molecular oxygen and hydrogen peroxide. Superoxide is produced as a byproduct of oxygen metabolism and if not regulated, causes many types of cell damage. Pretreatment with Ginkgo biloba extract was found to increase glutathione and superoxide dismutase. The levels of malondialdehyde and nitric oxide increase with age, both of which increase oxidative stress, pretreatment with Ginkgo suppressed them. An excessive level of free radicals can attack the DNA and cause damage, which brings about mutations and damage. Ginkgo stimulates DNA repair and protects it from oxidation.

Free radicals can lead to mitochondrial dysfunction. Mitochondrial dysfunction can initiate the release of reactive oxygen species and induce preoxidative reactions which lead to mitochondrial biomolecules damage.

Mitochondrial function is thus impaired which causes neuronal cell death and increased tissue loss, which is associated with aging. Ginkgo biloba can reduce this process ^[12]. In order to investigate the effect of Ginkgo biloba on mitochondrial functions, a study was conducted using PC12 cells, dissociated mice brain cells and isolated mitochondria ^[13]. PC12 cells are a cell line from pheochromocytoma of the rat adrenal medulla having embryonic origin from the neural crest which has a mixture of neuroblastic and eosinophilic cells. It is versatile for pharmacological manipulation, can be cultured easily and and has more information on their proliferation and differentiation. They have some features of neurons and are useful in the study of nerve physiology and pharmacology ^[14]. Mitochondrial abnormalities during aging were artificially introduced using external factors like nitrosative stress, serum deprivation and complex inhibitors. As markers for the function of mitochondria, ATP levels and mitochondrial membrane potential were measured. EGB 761 showed beneficial effects on mitochondrial respiratory chain and against nitrosative stress. It also showed protective effect on mitochondrial membrane potential ^[13]. EGB 761 is a standardized extract of Ginkgo biloba leaves ^[15].

Ginkgo biloba can enhance cAMP levels to regulate intracellular Calcium ionic concentration and inhibit platelet aggregation in humans. It was also found that it could reduce blood viscosity and improve cerebral perfusion in specific areas. The patients who took 180 mg /day of ginkgo extract for 6 wks showed a significant improvement in tasks assessing processing speed. It increased the neuronal excitability, and efficacy of synaptic plasticity in the hippocampus of aged rats.

It is widely accepted that beta amyloid precursor protein and amyloid beta peptide play key roles in the development of Alzheimers. Ginkgo can decrease its levels. In Parkinsons disease, there is progressive loss of dopamine neurons. Pretreatment with Ginkgo could decrease dopamine neuron loss in the substantia nigra and improve the behavioral deficit in a rat Parkinsons model. Anticancer efficacy of ginkgo was induced through its anti-proliferative and apoptotic properties in the cancer affected animals ^[12].

Homoeopathic aspect

In a prospective multicentre cohort study including patients treated with Homoeopathy in Germany and Switzerland, it was concluded that the severity of disease showed marked improvements under Homoeopathic treatment. It was also concluded that Homoeopathic treatment was beneficial in the long term care of old people with chronic diseases ^[16].

In 2010, in a meta analysis combining nine studies to test whether Ginkgo biloba was more effective than placebo in reducing memory problems and Alzheimers disease, German researchers found that worsening of memory loss was less likely for patients taking Ginkgo biloba compared to those taking placebo ^[17].

According to Dorland's medical dictionary, 'Gerontology is the scientific study of the problems of aging in all its aspects'^[18] The aims of gerontology must be preventing early aging and preserving the normal functions of old people as long as possible. Ginkgo biloba can fulfill these aims to a certain limit ^[19].

Ginkgo biloba was proved by E. A. Maury in 1933, with the mother tincture on seven provers (five men and two

women), and with the sixth potency on two male provers.

Clinically it is indicated in absent mindedness, Alzheimer's disease, weak attention, Brain disorders, poor concentration, Dyslexia, weak memory, mental weakness and senility.

There is exhausted sensation and mental fatigue. Mental work is an effort to carry out. Poor concentration, dullness of mind, forgetfulness and inability to solve mental tasks are also seen. Nebulous condition with the impression of unreality, irrational fears with rapid speech, tendency to criticize others and himself, suppressed anger with desire to tear up something ^[20].

A recent proving of Ginkgo biloba was done by "Schule der Homoeopathie"(Homoeopathy Forum, Gauting, Germany.) with 16 provers. A few symptoms from this new proving are as follows:

- Unreasonable fear with rapid flow of words
- Bad effects of suppressed anger
- Left and right hemispheres of the brain are alternately emphasized, promoting sometimes analytical, sometimes intuitive thinking
- Feeling as if brain were falling apart
- Before falling asleep, perceiving himself on a diagonal axis between the sky and the bottom of the ocean while he is constantly swinging to and fro between the ends of the axis.
- Feeling as if a car is crashing into him and as if a person is walking through him ^[21].

Conclusion

The main aim of geriatric care is to treat and prevent diseases, disability or illness of old people as well as to enhance their general health. Homoeopathy fulfills all the parameters required for being an ideal system of medicine for geriatric care. Ginkgo biloba, an age old herb which acts on many old age problems, will certainly prove beneficial to these frail bodies with comorbidities and polypharmacy, without overburdening their systems.

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