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## Ginkgo biloba mother tincture: A panacea for the aging brain

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### 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 a 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 diseases and disorders.

**Keywords:** Brain, geriatrics, ginkgo biloba, homoeopathy

### Introduction

Every living being passes through the phenomenon of ageing. As we get old, what reminds us of our age are the greying hair, wrinkled skin, stiff joints and so on. All these changes are due to the deterioration in the functioning of the physical and chemical makeup of our body. As all our organs, 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, brain tumours 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 keeping away from smoking and alcohol, controlling high blood pressure and high cholesterol, keeping fit mentally and physically with daily exercise and meditation 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 the Ginkgo biloba.

### Aging and the brain

While we undergo the process of aging, our genome becomes unstable due to the changes at the molecular level. These changes include gradual loss of neurons and neurotransmitters, inflammations, loss of natural structure and function of blood vessels leading to ischaemias and infarctions. These can lead to physical and functional deterioration of the brain. Reduced efficiency of DNA repair leads to abnormal proliferations leading to neoplastic changes in old age. 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 <sup>[1]</sup>.

### Common neurological disorders in old age

Stroke-it is one of the reasons for the disabilities and mortality in old age. It reduces the quality of life in the elderly. Troubles in movements either due to the lack of signal transmission from cerebral cortex or due to cerebral injuries or muscle atrophy can occur. Cognitive impairment is another reason for disability after stroke. Language impairment, weakness and depression can also occur. Smooth functioning of the bowels and bladder may also be affected <sup>[2]</sup>. Epilepsy-Epilepsy in the old age can be due to stroke related changes in the brain, dementia or tumours <sup>[3]</sup>.

Dementia-Dementia is a chronic or persistent disorder of the mental processes caused by brain disease or injury and marked by memory disorders, personality changes and impaired reasoning. 60-70% of dementia is due to Alzheimer's disease <sup>[4]</sup>.

Alzheimer's disease-it is a neurodegenerative disorder marked by cognitive and behavioral impairment that significantly interferes with social and occupational functioning.

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It begins as memory loss, confusion, difficulty in performing daily activities, problems in judgement and decision making, loss of spontaneity and sense of initiative, progressing to severe forms, the patient becoming completely dependent [5].

Parkinson's disease- It affects about 1% of our elderly population. The diagnostic features of Parkinson's disease are resting tremor, rigidity and bradykinesia [6].

Brain tumour-The percentage of elderly patients who get inflicted with brain tumours is higher than that of younger individuals. The problem with old age people in the treatment of brain tumours is that their system is too weak to endure the harmful effects of chemotherapy and radiation [7].

Ginkgo biloba has been used in traditional Chinese medicine over centuries. It is used in many parts of the world to improve memory. Its good properties are being studied and investigated in the treatment of Alzheimer's 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. In records, it is said that as a medicine, it was first used in China in the 15 th century. In Germany, it was first used in 1965. It is already established through clinical trials that Ginkgo biloba is efficient in managing the sufferings of Alzheimer's disease [12].

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

### Pharmacological action of Ginkgo biloba

Ginkgo biloba has antioxidant properties. 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 entering the biological system from outside, like drugs, 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. If it is not regulated, it causes many types of cell damage. Ginkgo biloba extract was found to be beneficial in increasing glutathione and superoxide dismutase. The levels of malondialdehyde and nitric oxide increase with age, both of which increase oxidative stress. Ginkgo can suppress them. Ginkgo stimulates DNA repair and protects it from oxidation.

Free radicals can lead to mitochondrial dysfunction. Mitochondrial dysfunction causes neuronal cell death and increased tissue loss, which are associated with aging. Ginkgo biloba can reduce this process [12]. A study was conducted using dissociated mice brain cells and isolated mitochondria to study the effect of Ginkgo biloba on mitochondria [13]. A cell line from pheochromocytoma of the adrenal medulla of rat which embryonically originate from the neural crest was used in the study [14]. They are versatile for pharmacological manipulation, can be cultured easily and have more information on their proliferation and differentiation. They have some features of neurons and are useful in the study of nerve physiology and pharmacology. A standardized extract of Ginkgo biloba called Gb 761 was used in the study [15]. Ginkgo biloba extract was found to be

effective against nitrosative stress and has beneficial effects on mitochondrial respiratory chain [13].

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.

Beta amyloid precursor protein and amyloid beta peptide play key roles in the development of Alzheimers. Ginkgo can decrease their 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 rats. Anticancer efficacy of ginkgo was induced through its anti-proliferative and apoptotic properties in the cancer affected animals [12].

### Homoeopathic aspect

In a prospective multicenter cohort study including patients treated with Homoeopathy in Germany and Switzerland, it was concluded that the severity of the disease showed marked improvement 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, a meta-analysis combining nine studies to test whether Ginkgo biloba was more effective than placebo in reducing memory problems and Alzheimer's 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, asthma, 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 Homoeopathic" (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 the 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 <sup>[21]</sup>.

### 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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