

Application and Current Development of Chinese Traditional Medicine in the Treatment of Alzheimer's Disease in China

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Abstract

Neurodegenerative Alzheimer's disease (AD), which primarily impacts the elderly, is on the rise due to the accelerated aging process. Although there has been some success in studying AD thanks to modern science, effective treatment for this condition is still a way off. As a distinct and old medical system, traditional Chinese medicine (TCM) has shown promise in the treatment of Alzheimer's disease (AD). Traditional Chinese Medicine (TCM) as a therapy for Alzheimer's disease is the main topic of this article. The benefits of Ginkgo biloba extract on Alzheimer's disease (AD), specifically its neuroprotective, antioxidant, and cerebrovascular properties, as well as its method of action. blood flow to the brain. Furthermore, "liver and kidney deficiency," "phlegm and opacity," and "brain marrow deficiency" are some of the TCM hypotheses that have shed light on the disease's origins and how it works. Emerging from traditional Chinese medicine (TCM) notions such "brain marrow deficiency," "phlegm and opacity," and "liver and kidney deficiency" are fresh viewpoints on the origins and processes of Alzheimer's disease. More treatment choices and improved quality of life for Alzheimer's sufferers are anticipated to be brought about in the future by research into Chinese medicine merged with modern medical technologies. Research into the use of traditional Chinese medicine (TCM) in conjunction with contemporary medical technologies to treat Alzheimer's disease should lead to additional treatment options and an improved quality of life for patients in the future.

Keywords: Alzheimer's disease, traditional Chinese medicine, Ginkgo biloba extract, dementia, neurodegenerative diseases.

Introduction

Neurofibrillary tangles, neuronal cell death, and beta-amyloid deposition are the biological hallmarks of Alzheimer's disease (AD). The origins of Alzheimer's disease remain a mystery, despite recent advances in medical science and study. It is challenging to cure Alzheimer's since its origin is still up for debate and because current medications only alleviate symptoms. It is impossible to halt the disease's progression with most current treatments, which just alleviate symptoms. Because of its long history, Chinese medicine has developed its own distinct diagnostic and therapeutic framework for Alzheimer's disease.

Chinese medicine has a distinct understanding of Alzheimer's disease due to its long history as a medical system. In traditional Chinese medicine, diseases like Alzheimer's are referred to as "dementia" or "stupefaction" and the "cerebral spinal cord" is the principal site of origin and development. Its root causes are primarily associated with "spinal cord deficiency," "phlegm obscuration," "liver and kidney deficiency," and other similar conditions.

Brain marrow deficiency, phlegm obscuration, and liver and kidney deficiency are the main causes and mechanisms of the condition. The use of numerous Chinese medications and TCM therapies for Alzheimer's disease has shown promising outcomes in recent years. Among these, Ginkgo biloba extract stands out due to its encouraging performance in multiple clinical studies. Several clinical trials have demonstrated that ginkgo biloba extract has antioxidant, neuroprotective, and cerebral blood flow effects. Investigating TCM's potential in Alzheimer's disease treatment is crucial as the integration of Chinese and Western medicine is gaining acceptance on a global scale. Investigating the potential of TCM as a treatment for Alzheimer's disease is of utmost importance.

Theoretical basis of TCM in the treatment of Alzheimer's disease

All of the body's systems are interdependent, according to traditional Chinese medical thought. Disease, according to traditional Chinese medicine, stems from an imbalance between the body's yin and yang energies. When the body's yin and yang energies become unbalanced and stagnant, it can lead to a host of health problems. Traditional Chinese medicine identifies the following primary illness mechanisms as causing Alzheimer's disease. As the "capital of clear yang" in traditional Chinese medicine, the brain and spinal cord are believed to be embodied in the brain marrow, which is also believed to be connected to the kidney qi. There is a strong relationship between the kidney's essence and the brain marrow, which is the essence of the spinal cord and brain. Dementia, amnesia, and other symptoms resembling Alzheimer's disease are brought on by the slow loss of kidney essence with age, which damages the brain marrow. Rationale for treatment: strengthen the essence of the kidneys and nourish the bone marrow. Fructus Lycii, Radix Rehmanniae Praeparata, and Cortex Eucommiae are three of the most popular Chinese medicinal herbs.

The complicated molecular pathogenesis of AD. Figure 1 showed that there are numerous potential genetic, molecular, and cellular origins of AD. In this diagram, each node stands for a potential reason why AD could occur. Patients may experience neuronal death as a consequence of a complex interplay between these causative

processes.

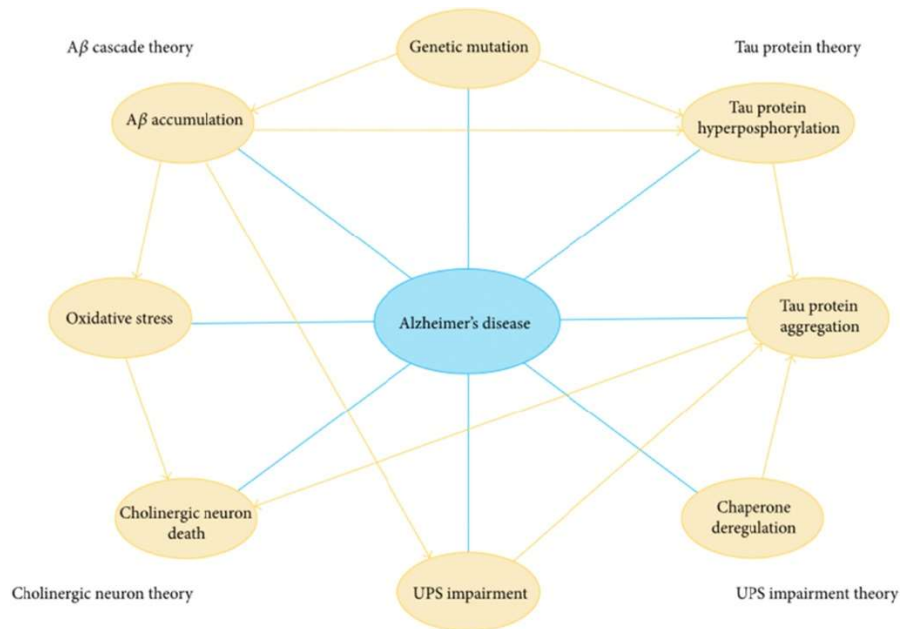


Figure 1 Pathology of AD. Source (Cooper & Ma, 2017).

The Chinese medical tradition holds that mental fogginess and confusion can result from phlegm and opacity. Mental disarray. The accumulation of phlegm and moisture in the body as a result of an unhealthy diet and emotional distress blocks the flow of qi and blood, which in turn blocks the flow of clear yang, which in turn prevents it from reaching the brain and causes a decrease in cognitive performance. A decrease in mental capacity results from this. The treatment involves clearing the airways and opening the qi and blood channels. Herbal remedies such as Chuanbei, Platycodon grandiflorus, Chenpi, Semixia, etc., have shown that mitochondria play a regulatory role in pathways that lead to cell death. Figure 1 depicts the pathophysiology of Alzheimer's disease.

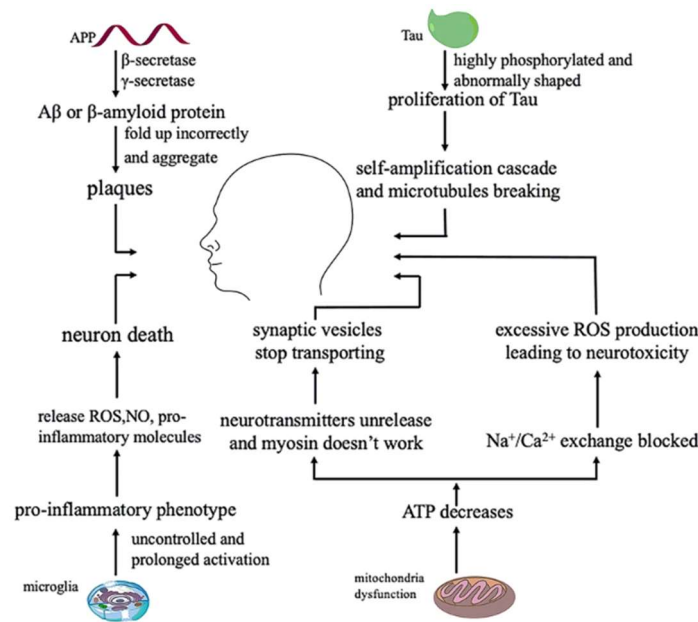


Fig. 1 The main pathogenesis of Alzheimer's disease. Source: (Fang, Tang, Ying. et al. 2020)

Relationship between Alzheimer's Disease and "Kidney Deficiency" and "Phlegm Stasis".

(1) Kidney deficiency. Because of its direct relationship to cognitive and memory functions, the "Kidney is the foundation of innate nature" in Chinese medicine. Its function in the brain is intimately related to memory and cognition. Kidney failure can harm the brain marrow, which in turn can cause Memory loss and mental weariness are some of the symptoms that may result from this. The treatment is to restore vitality and strengthen the kidneys. He Shou Wu, Huaishan, Gui Yuan, Chinese wolfberry, and Chinese herbal medicine are often used traditional Chinese medications. He Shou Wu, Chinese Wolfberry, Huai Shan, Gui Yuan, and many more are among the most popular Chinese remedies.

(2) Phlegm stasis. The blockage of qi and blood flow, known as blood stasis, worsens mental foginess when paired with phlegm and opacity. This condition is associated with dementia. In Alzheimer's disease, beta-amyloid builds up in brain cells.

Methods and applications of Chinese medicine in the treatment of Alzheimer's disease

Herbal formulas and single-flavored drugs

(1) Chinese herbal formula. (i) Heavenly King's Heart Tonic Dan: nourishes the yin and reduces the fire, it is used for insomnia, palpitations and other symptoms caused by incompatibility between heart and kidney. (ii) Tranquilising the Mind Tingzhi Pill nourishes the heart and calms the mind, and is amazingly effective for symptoms such as fatigue, palpitations and anxiety. (iii) Banded tablet: Activates blood circulation and removes

blood stasis, clears collaterals and relieves pain; treats hemiplegia and distorted eyes and mouth caused by blood stasis. Xuan MuIt is used to treat spasms and convulsions caused by wind-dampness obstruction. It is used to treat spasms and convulsions caused by wind-dampness obstruction.

(2) Single-flavoured drugs.

(i) Huanglian: clears heat and dries dampness, helps to reduce phlegm and opacity in the brain, reduces phlegm and opacity in the brain and has a protective effect on cognitive function. (ii) Deer antler: tonifies the kidneys and benefits the essence, it is amazingly effective for cerebral spinal cord deficiency caused by insufficient kidney essence. It has a good curative effect on spinal cord deficiency caused by kidney essence deficiency. (iii) Salvia miltiorrhiza: activates blood circulation and removes blood stasis, improves microcirculation in the brain and helps to slow down the progression of the disease. (4) Cuttlebone: Nourishes the liver and subdues yang, calms the mind and fixes the will. It has a good effect on insomnia and amnesia caused by liver fire.

Acupuncture, Tuina and other external treatments

(1) Acupuncture. (1) Baihui point and Shenfu point: Used to clear the mind and spirit, improve memory and cognitive function. Improves memory and cognitive function. (2) Solar point and Fengchi point: Used to clear the wind and relieve symptoms, relieve headache and improve cognitive function. (ii) Sun point, Fengchi point: for clearing the wind and relieving symptoms such as headache and dizziness. Foot Sanli point, San Yin Jiao point: used to strengthen the spleen. Yinjiao points: to strengthen the spleen and stomach, stimulate appetite and improve digestion. (2) Push. (1) Head Tuina: enhances memory and cognitive function by stimulating brain channels that increase phlegm. Massage of the neck has many benefits, including increased blood flow and less strain on the cervical spine. Massage of the neck has many health benefits, including increased blood flow, alleviation of cervical spondylosis symptoms, less vertigo, and migraines. Back massage has many benefits, including reducing lumbago and back discomfort, strengthening the lower back, and stimulating the spine. Herbal formulations and other traditional Chinese medicine treatments for Alzheimer's disease Various forms of exterior treatments, including as acupuncture and tuina massage, as well as internal ones, such herbal formulae and particular medications, are utilized in Chinese medicine to treat Alzheimer's disease. These approaches integrate the patient's current physical state with traditional Chinese medicine's knowledge of Alzheimer's disease's origin and pathology. in order to facilitate treatment. To alleviate symptoms and reduce the disease's progression in clinical practice, it is best to combine multiple techniques. To alleviate symptoms and reduce the disease's progression in clinical practice, it is best to combine multiple techniques. An Alzheimer's disease cure with Ginkgo biloba extract.

Main constituents and pharmacological effects of Ginkgo biloba extracts

1. Main constituents. Ginkgo biloba extract contains flavonoid compounds (such as oleanolic acid, isoleanolic acid), terpenoids (such as bisabolone) and organic acids (such as bis(ketone)).
2. Pharmacological effects. Antioxidant: The flavonoids in Ginkgo biloba extract have strong antioxidant properties. The flavonoids in Ginkgo biloba extract have strong free radical scavenging effects and are able to counteract oxidative stress, thus preventing nerve cell damage.
3. Anti-inflammatory: Ginkgo biloba extract may inhibit the release of certain inflammatory factors and reduce

brain inflammation. (ii) Anti-inflammatory: Ginkgo biloba extract may inhibit the release of certain inflammatory factors and reduce brain inflammation. Stimulates blood circulation: Ginkgo biloba extract may dilate blood vessels and improve microcirculation in the brain. Neuroprotective, antioxidant and cerebral blood flow-enhancing effects of Ginkgo biloba extract Cerebral blood flow Neuroprotection. Ginkgo biloba extract can reduce the formation and accumulation of neurotoxic substances such as β -amyloid, thus protecting nerve cells. ① Neuroprotection. Antioxidant. Ginkgo biloba extract can increase the activity of antioxidant enzymes such as superoxide dismutase (SOD) and glutathione peroxidase (GSH-P).enzyme (SOD) and glutathione peroxidase (GSH-Px), thus reducing free radical damage. (iii) Increase cerebral (iii) Increase cerebral blood flow. Ginkgo biloba extract may increase blood flow to the brain, providing more oxygen and nutrients to the brain. Ginkgo biloba extract may increase blood flow to the brain, providing more oxygen and nutrients to the brain, thus improving neurological function.

Efficacy and safety of Ginkgo biloba extract in patients with Alzheimer's disease.

(1) Therapeutic efficacy. Ginkgo biloba extract has demonstrated in multiple clinical trials that it can enhance cognitive performance and memory in Alzheimer's patients, especially those in the early and intermediate phases of the disease. Ginkgo biloba extract has longer-lasting benefits compared to other pharmaceuticals. Risk management. There aren't many negative effects from taking the prescribed dosages of ginkgo biloba extract. But a little indigestion, headache, or allergic reaction could happen to some people. A little indigestion, headache, or allergic reaction could happen to certain people.

Combined use of Ginkgo biloba extract with other therapeutic methods

The neuroprotective and therapeutic effects of Ginkgo biloba extract can be amplified when used in conjunction with certain tonic medications found in traditional Chinese medicine, such as ginseng, Radix Rehmanniae Praeparata, Lycium barbarum, and others. Use in conjunction with conventional Western medication. Ginkgo It is possible to increase the neuroprotective and therapeutic effects of ginkgo biloba extract by combining it with some anti-Alzheimer's medications, such as zoledronic acid, meloxetam, etc. An increase in therapeutic efficacy with a decrease in adverse effects is possible with ginkgo biloba extract. A significant medicine in the treatment of Alzheimer's disease, Ginkgo biloba extract has become known for its neuroprotective, antioxidant, and cerebral blood flow effects. Dementia caused by old age. It can enhance treatment efficacy, decrease adverse effects, and boost treatment efficacy when used in conjunction with other therapeutic techniques. expand patients' access to therapy options while simultaneously improving therapeutic efficacy and decreasing negative effects.

Progress of research on other Chinese medicines in the treatment of Alzheimer's disease

Selection and combination of herbs

The idea of traditional Chinese medicine states that the illness's nature, mechanism, and causation should inform the choice and combination of herbs. Here are some of the herbs that have shown promise in the treatment of Alzheimer's disease, according to the research. It was Wu Shou: Possible benefit includes a reduction in the severity of "brain marrow deficiency" symptoms. Got ready Chuanwu increases cerebral microcirculation, aids in phlegm clearance, and eliminates wind and pollutants. A common remedy for amnesia and dementia brought

on by phlegm and opacity, the calamus opens the air passages and stimulates the brain. Crocus sativus: reduces inflammation in the brain, clears heat, and disperses wind. Herb selection requires careful consideration of the patient's constitution, illness stage, and other relevant symptoms. Consideration of the patient's current health status, disease progression, and other symptoms is essential when selecting an herbal remedy. To maximize efficacy and minimize negative effects, herbal medicines are frequently used in combination. Combining different herbal remedies can boost their efficacy and reduce their adverse effects.

Clinical studies and case sharing

Study 1: A study including sixty individuals with mild to moderate Alzheimer's disease. Using a mixture of the herbal remedy, a clinical experiment was conducted on 60 individuals with mild to moderate Alzheimer's disease. Prepared Sichuan, He Shou Wu, and Acorus calamus.

General Practice

Wu as the primary components of a therapeutic blend of Chinese herbal remedies. Both the cognitive function and the severity of side effects were found to be considerably improved in the herbal medication group after three months of therapy compared to the control group. The herbal medicine group saw milder side effects compared to the control group. Crocus sativus extract enhanced cognitive function with fewer side effects than the control group in a 6-month clinical trial, according to Study 2. Scientists discovered that an extract from Crocus sativus considerably decreased brain inflammation and halted the disease's advancement. and mitigated the disease's course.

Case study: The first diagnosis for a 75-year-old patient was multi-symptomatic Alzheimer's disease. Alzheimer's disease is marked by a steady deterioration in the capacity to carry out ADLs, as well as forgetfulness and diminished numeracy. Initially, Alzheimer's disease was the diagnosis given to the patient. His memory and cognitive functions were greatly enhanced after three months of treatment with a combination of Chinese herbal medicine. His family also reported that his memory and cognitive functions were restored. The main ingredients in this medicine are He Shouwuwu, Acorus calamus, Crocus sativus, and Prepared Chuanwu. His relatives also mentioned that he was able to perform daily tasks again. A fresh outlook and approach to treating Alzheimer's disease are presented by Chinese medicine. strategies for the amelioration of dementia. Chinese medicine's effectiveness and the method by which it works in this area will be more thoroughly confirmed and acknowledged as additional studies and clinical trials are conducted.

Future prospects for the treatment of Alzheimer's disease

Treatment Strategies Combining Chinese and Western Medicine

(1) Combining a comprehensive approach with more specific forms of treatment Using both molecular science and the more holistic view of Chinese medicine. The goal of this treatment is to identify and eliminate the underlying causes of the disease by integrating the molecular biology and gene technology approaches of Western medicine with the more holistic view of Chinese medicine. In order to deliver personalised treatment based on the cause and mechanism of disease, a fusion of Western medicine's molecular biology and gene technology with TCM's holistic philosophy and focused treatment would be necessary.

(2) The integration of pharmaceutical medications with traditional Chinese medicine. When it comes to symptom relief and overall bodily regulation, traditional Chinese medicine excels. While Western medicine may clearly intervene in lesions, Chinese medicine excels at regulating the body and alleviating symptoms. When it comes to intervening in lesions, Western drugs have clear impacts. When used together, they can enhance the therapeutic efficacy and bring about additional beneficial side effects.

(3) Learn more about how the nervous system interacts with meridians. Discover a novel approach to treating Alzheimer's disease by studying the interactions between the neurological system and traditional Chinese medicine (TCM) treatments such as acupuncture, tuina, Tui Na, and others.

(4) To explore the relationship between TCM treatments such as acupuncture and tuina and the nervous system, so as to open up a new way for the treatment of Alzheimer's disease.

Potential applications of emerging research and technologies

(1) Gene editing technology. Gene editing technology, such as CRISPR/Cas9, can be used to target Alzheimer's disease. Gene editing technology, such as CRISPR/Cas9, can be used to repair or regulate Alzheimer's disease-related genes, which can prevent Alzheimer's disease at its source. CRISPR/Cas9 and other gene-editing technologies can repair or regulate the genes associated with Alzheimer's disease, preventing or delaying the progression of the disease at its source.

(2) Stem cell therapy. Using induced pluripotent stem cells (iPSCs) technology, the patient's own cells are reprogrammed into neural cells to replace damaged neural cells, which can restore nerve function.

(3) Biomarkers and early diagnosis. Research into biomarkers related to Alzheimer's disease and early diagnosis. Alzheimer's disease biomarkers can provide new tools for early diagnosis of the disease and evaluation of treatment effects.

(4) Nanotechnology. The use of nanotechnology to develop new drug-delivery systems using nanotechnology to ensure that drugs can be delivered precisely to the diseased areas of the brain, which can improve the accuracy and effectiveness of treatment.

(5) Artificial intelligence and big data. Big data analysis and artificial intelligence can forecast how a patient's ailment will progress and how well a treatment will work. This allows for more tailored treatment recommendations. Treatment choices for Alzheimer's disease are getting better as time goes on because of scientific and technological advancements. There is new hope for early diagnosis and treatment of Alzheimer's disease thanks to the combination of Chinese and Western medicine, which gives patients more treatment options. Additionally, new research and technology are being applied to this problem. More and more treatments for Alzheimer's disease are predicted to develop and be validated in the future, which could lead to even better outcomes. Additional therapeutic options for Alzheimer's disease will develop and be validated in the future, leading to even better outcomes.

Conclusion

Ginkgo biloba extract has shown promise in treating mild to moderate Alzheimer's disease in multiple

randomized controlled trials. Patients with this form of the disease have shown marked improvements in their memory and cognitive function, and the extract is safer than competing treatments. New possibilities for treating Alzheimer's disease may arise as a result of the integration of Chinese and Western medicine, which allows for personalised treatment based on each patient's unique circumstances. New possibilities for treating Alzheimer's disease may arise as a result of the integration of Chinese and Western medicine, which allows for personalised treatment based on each patient's unique circumstances. New possibilities for treating Alzheimer's disease may arise as a result of the integration of Chinese and Western medicine, which allows for personalised treatment based on each patient's unique circumstances. New possibilities for treating Alzheimer's disease may arise as a result of the integration of Chinese and Western medicine, which allows for personalised treatment based on each patient's unique circumstances. Ginkgo biloba extract highlights the significance and promise of traditional Chinese medicine (TCM) in this area by virtue of its outstanding effectiveness.

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