

The biochemical and evidential bases for the use of Turmeric and *Ginkgo biloba* in Alzheimer disease

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A growing body of evidence indicates that oxidative stress, free radicals, beta amyloid, cerebral deregulation caused by bio-metal toxicity and abnormal inflammatory reactions contribute to the key event in Alzheimer's disease pathology, and can be reduced with increased antioxidant and anti-inflammatory consumption. Turmeric contains curcumin a yellow pigment with phenol structure which has potent anti-inflammatory and anti-oxidant activities and can suppress oxidative damage, inflammation, cognitive deficits, and amyloid accumulation. Curcumin effectively disaggregates beta-Amyloid as well as prevents fibril oligomer formation .

Curcumin may help the macrophages to clear the amyloid plaques found in Alzheimer's disease. Curcumin was treated with macrophages to clear the amyloid plaques found in Alzheimer's disease. Curcumin was treated with macrophages in blood taken from nine volunteers: six AD patients and 3 healthy controls. Beta amyloid was then introduced. The AD patients, whose macrophages were treated with curcumin, showed an improved uptake and ingestion of the plaques.

The presence of activated microglia and reactive astrocytes around amyloid-beta plaques in brains from patients with AD has been demonstrated. The chronic activation of microglia secretes cytokines and some reactive substances that exacerbate amyloid-beta pathology. Curcumin has anti-proliferative actions on microglial . One of the important pathogenesis in Alzheimer's disease is the chronic inflammation of nerve cells. Curcumin decreases the main chemical for inflammation and the transcription of inflammatory cytokines.

Curcumin as anti-oxidant decrease inflammation. An extract of *Ginkgo biloba* has been found to improve the symptoms and slow the progression of Alzheimer's disease. A study of 309 patients with mild dementia were given 120 mg *Ginkgo biloba* extract or placebo every day for up to a year.

The treatment group showed improvement on a variety of cognitive tests. The extract has been demonstrated the ability to increase cholinergic activity, and normalize the acetylcholine receptors in the hippocampus area of the brain in aged animals.

A study compared the effectiveness of the most common Alzheimer's drugs, such as donepezil and rivastigmine, to that of *Ginkgo* extract. The extract was as effective as any of these commonly prescribed drugs in treating the symptoms of Alzheimer's patients.