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## The Mechanisms of Action of Curcumin in Alzheimer's Disease.

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### Abstract

Alzheimer's disease (AD) is a neurodegenerative disorder of the elderly. As the prevalence of AD rises in the 21st century, there is an urgent need for the development of effective pharmacotherapies. Currently, drug treatments target the symptoms of the disease and do not modify or halt the disease progress. Thus, natural compounds have been investigated for their ability to treat AD. This review examines the efficacy of curcumin, a polyphenol derived from turmeric herb, to treat AD. We summarize the in vivo and in vitro research describing the mechanisms of action in which curcumin modifies AD pathology: curcumin inhibits the formation and promotes the disaggregation of amyloid- $\beta$  plaques, attenuates the hyperphosphorylation of tau and enhances its clearance, binds copper, lowers cholesterol, modifies microglial activity, inhibits acetylcholinesterase, mediates the insulin signaling pathway, and is an antioxidant. In conclusion, curcumin has the potential to be more efficacious than current treatments. However, its usefulness as a therapeutic agent may be hindered by its low bioavailability. If the challenge of low bioavailability is overcome, curcumin-based medications for AD may be in the horizon.

**KEYWORDS:** Alzheimer's disease; amyloid- $\beta$ ; curcumin; tau protein; turmericPMID: 28527218 DOI: [10.3233/JAD-170188](https://doi.org/10.3233/JAD-170188)**LinkOut - more resources**