

Turmeric for Alzheimer's: Golden Spice or Cure?

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Alzheimer's disease (AD) is an incurable, progressive disease well known for its devastating effects and its position as the seventh leading cause of death in the United States [1]. But without a cure, how is it being treated? According to the National Institute on Aging, there are a few prescription medications approved by the Food and Drug Administration (FDA) available to help improve the symptoms of AD [2]. However, taking prescription medications is not the only method available to treat the symptoms of the disease. When it comes to the management of AD, holistic herbal remedies are often overlooked in favor of modern medicine.

THIS ARTICLE EXPLORES THE ABILITY OF TURMERIC TO IMPROVE COGNITIVE FUNCTION AS WELL AS THE RESULTS OF RELEVANT RESEARCH.

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WHAT IS TURMERIC?

TURMERIC IS A YELLOW-COLORED SPICE NATIVE TO SOUTHERN INDIA AND HAS BEEN USED FOR OVER 4,500 YEARS IN FOOD AND MEDICINE [3].

Around 2,500 years ago, the spice became an integral component of a natural system of medicine, known as Ayurveda [4][5]. Turmeric has been used to treat inflammatory diseases, tumors, and sinusitis among other ailments. The healing quality of turmeric is in part due to curcumin—the component of turmeric that gives it its signature yellow color. Curcumin has anti-inflammatory, antioxidant, anticarcinogenic, and antiviral properties, which means that it helps reduce inflammation, cell damage, the development of cancer, and the growth of viruses, respectively [6]. The anti-inflammatory property of curcumin has been linked to a reduced risk of AD [7].

WHAT IS AD?

AD IS A NEURODEGENERATIVE DISEASE CHARACTERIZED BY A DECLINE IN COGNITIVE ABILITY AND EXECUTIVE FUNCTION [8]. THE DISEASE IS THE MOST COMMON TYPE OF DEMENTIA, AFFECTING MORE THAN SIX MILLION AMERICANS [1].



Individuals with AD may have trouble finding the right words or completing daily tasks, such as driving and cooking [9]. The progressive decline characteristic of AD stems from structural changes in the brain. In individuals with advanced AD, there is an abnormal presence of two proteins, amyloid- (A) and tau. These proteins gather together in unusually high levels to form plaques (A) and tangles (tau). After forming unnaturally, the plaques situate themselves between neurons and the tangles inside of them, eventually disrupting normal brain function [10]. These aberrant proteins negatively impact communication between neurons by interrupting the connections between them [10].

Recent evidence suggests that the plaques and tangles work together in the progression of AD [11]. Essentially, the presence of the plaques exacerbates the effects caused by the tangles in individuals with AD. In addition, while plaques and tangles are considered key biomarkers of AD, new findings indicate that they may be the result of other mechanisms that induce AD [12].



HOW DOES TURMERIC AFFECT AD?

TURMERIC—SPECIFICALLY CURCUMIN—HAS BEEN SHOWN TO RELIEVE AD SYMPTOMS RESULTING FROM ABNORMALLY LARGE AMOUNTS OF PLAQUES AND TANGLES.

One study found that highly concentrated plaque deposits in aged mice were significantly reduced upon the oral administration of curcumin [7]. This evidence suggests that the ingestion of turmeric may help improve AD symptoms in individuals with an advanced stage of AD. In addition, other research has found that curcumin prevents the formation of plaques while simultaneously promoting their separation, which suggests that turmeric may help reduce AD symptoms caused by plaques in every state of pathogenesis, or the development of the disease [13].

AD symptoms such as impaired memory, generally correlated with an abnormally large clustering of tangles, have also been shown to improve with curcumin exposure [14] [15]. Curcumin exposure in mice modified to express tau concentrations similar to those associated with AD in humans significantly decreased the amount of tau dimers, or two linked tau proteins [16]. Additionally, other research suggests that curcumin may reduce tau-induced neurotoxicity by increasing the stabilization of microtubules—a cell structure that becomes unstable with AD pathogenesis [17]. These pieces of evidence indicate that the neuroprotective effects of turmeric may combat the AD symptoms caused by neurofibrillary tau tangles as well.

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HOW IS TURMERIC HEALTHILY CONSUMED?

Like many consumables, turmeric must be ingested in moderation to be truly beneficial—too much of it could do more harm than good. The recommended daily intake of curcumin, according to the World Health Organization, is 1.4 mg per pound of body weight [18]. While curcumin is a component of turmeric, the ratio of turmeric to curcumin is not one-to-one. In other words, since curcumin makes up just a small part of turmeric, the amount of turmeric consumed must be large enough to provide the desired curcumin intake. The average Indian diet is a great example of this situation, as it contains about 2,000-2,500 mg of turmeric per day, but only 60-100 mg of curcumin is consumed [18].

Along with paying attention to the amount of turmeric consumed, it is also important to ensure that consuming turmeric is not detrimental due to underlying medical conditions. For instance, it is not recommended for those with bleeding disorders to ingest turmeric, as it may slow blood clotting even further [19]. In addition, it is suggested that those taking medications for conditions such as diabetes do not consume turmeric as it may interact with their medications [20]. However, even in these circumstances, turmeric consumption of the normal amounts found in foods is almost always safe.

For those looking to consume turmeric and obtain its benefits, there are several methods of consumption. Turmeric—commonly found in root or powder form—can be added to food or drinks such as soup or tea for regular intake [21]. In addition, if the food that turmeric is taken with has a source of fat, such as olive oil, then the benefits of turmeric will be more readily absorbed by the body [22]. Another method of consuming turmeric is taking turmeric supplements. Taking supplements allows for an increased concentration of turmeric and more precise dosage control compared to taking turmeric with meals. When choosing a supplement, it is important to keep in mind that each supplement is different due to a variety of factors—including dose, form of supplement, and level of absorption by the body—and therefore it is essential to discuss available options with a healthcare professional before deciding on a supplement.

Given the prevalence of prescription medications in AD management, it is important to recognize that herbal remedies like turmeric can contribute to the improvement of cognitive function as well. By incorporating turmeric into our diets we will be able to understand the neuroprotective benefits of this ancient yellow spice firsthand. 🧠



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