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### Role of herbs in the management of Alzheimer disease

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Alzheimer's disease (AD) is the most common form of progressive neurodegenerative dementia of the aged brain, characterized by the deterioration of cognitive functions. It affects millions of people and has become a major medical and social problem for developing societies. Current therapeutic options for AD are limited. Many promising agents have failed in clinical trials because of therapeutic limitations i.e. only providing symptomatic relief from cognitive deficits. An agent that cannot only improve cognitive functions but also block neuronal loss in AD brain is urgently needed. The pathological features that have been identified in the central nervous system (CNS) in AD are senile plaques and neurofibrillary tangles, oxidative and inflammatory processes and neurotransmitter disturbances. Some AChE inhibitors have been licensed for clinical use to treat mild to moderate AD cases, but their effect is only to alleviate symptoms and they do not achieve any permanent improvement. The synthetic drug tacrine (Cognex) was the first AChE inhibitor to be licensed, but its routine use has been restricted largely due to its hepatotoxicity. The use of tacrine has been eclipsed by the newer AChE inhibitors such as donepezil, rivastigmine and galantamine. In traditional practices of medicine, plants have been used to enhance cognitive function and to alleviate other symptoms associated with AD. Plant constituents may not only act synergistically with other constituents from the same plant but may also enhance the activity of compounds, or counteract toxic effects of compounds, from other plant species. This approach has been used in various practices of traditional medicine, including Ayurveda and traditional Chinese medicine (TCM) where a combination of plants is frequently prescribed. An ethnopharmacological approach may be useful in providing leads to identify plants and potential new drugs that are relevant for the treatment of cognitive disorders, including AD. In recent time, thymoquinone a major active principle of *nigella sativa* is reported with many pharmacological effects like immunostimulant, anticancer, anti-inflammatory, antiasthmatic, hypoglycaemic, and antioxidant. Particularly antioxidant effect of thymoquinone is reported as the mechanistic basis of its cytotoxic and hypoglycaemic effect. In many reports, bioactive/phytoconstituents having antioxidant amalgamated anti-inflammatory effect showed amelioration of cognitive deficits and neurodegeneration. Till now, no work has been carried out on this novel bioactive agent directed towards neurodegeneration or neuroprotective pharmacological effect in cognitive disorder like Alzheimer. So On the basis of the above established hypothesis, the aim of this report is to establish or evaluate the neuroprotective and functional restoration potential of thymoquinone in Alzheimer. In the study we used intracerebroventricular streptozocin injection in rat as animal model because of its established relevancy particularly for sporadic dementia of Alzheimer type which is characterized by progressive deterioration of memory, enhanced oxidative stress with cholinergic deficiency.

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