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THE IN SILICO IDENTIFICATION OF AN HERB THAT CAN AMELIORATE COGNITIVE DECLINE IN MICE MODEL FOR ALZHEIMER'S DISEASE

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Background: Conventional drug discovery has focused on developing synthetic chemicals. However, a number of chemical drugs have been withdrawn during preclinical stages or from the market due to toxicity concerns. Natural herbs have been receiving more attention lately because of their relatively low toxicity levels and the abundance of historical medical documentation supporting their use.

Nevertheless, efforts to find those that might help treat diseases have frequently been ad hoc due to a need for more knowledge regarding these herbs and their compounds; consequently, there is a growing demand for an in silico method to identify beneficial herbs.

Aims & Objectives: Using an in silico approach, we aimed to find a natural therapeutic herb that could help treat Alzheimer's disease (AD). We then tested the herb's effectiveness in treating AD in a mouse disease model.

Methods: This study offers a computational method for determining which natural herbs are particularly useful in treating AD patients' cognitive decline. Our in silico approach examined the parallels between herbal remedies and well-known medications that target proteins linked to AD. We were able to locate a possible medicinal herb for the treatment of AD via this method. Later, its effectiveness in treating cognitive decline in AD mouse models was evaluated experimentally.

Results: Our in silico approach allowed us to identify herb A, which dramatically reduced the cognitive decline brought on by neurodegeneration in an AD mouse model. According to behavioral analyses, herb A considerably enhanced memory and motor abilities. By using our approach, we determined that the compounds found in herb A were comparable to known inhibitors of multiple therapeutic target proteins of AD, which can regulate symptoms of AD.

Discussion & Conclusions: Our in silico method suggests that herb A may help AD patients' cognitive decline. Additionally, the trial findings demonstrated that herb A has the potential to be clinically helpful in preventing mild cognitive impairment in the early phases of Alzheimer's disease. These results demonstrate the potential value of our in silico approach and the potential therapeutic use of the identified natural herb in managing and preventing AD.

Keywords: in silico method, herbs, alzheimer's disease