The Emerging Role of Nutraceuticals and Phytochemicals in the Prevention and Treatment of Alzheimer's Disease

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Abstract

One of the major challenges of medical sciences has been finding a reliable compound for the pharmacological treatment of Alzheimer's disease (AD). As most of the drugs directed to a variety of targets have failed in finding a medical solution, natural products from Ayurvedic medicine or nutraceutical compounds emerge as a viable preventive therapeutics' pathway. Considering that AD is a multifactorial disease, nutraceutical compounds offer the advantage of a multitarget approach, tagging different molecular sites in the human brain, as compared with the single-target activity of most of the drugs used for AD treatment. We review in-depth important medicinal plants that have been already investigated for therapeutic uses against AD, focusing on a diversity of pharmacological actions. These targets include inhibition of acetylcholinesterase, 0-amyloid senile plaques, oxidation products, inflammatory pathways, specific brain receptors, etc., and pharmacological actions so diverse as anti-inflammatory, memory enhancement, nootropic effects, glutamate excitotoxicity, anti-depressants, and antioxidants. In addition, we also discuss the activity of nutraceutical compounds and phytopharmaceuticals formulae, mainly directed to tau protein aggregates mechanisms of action. These include compounds such as curcumin, resveratrol, epigallocatechin-3-gallate, morin, delphinidins, quercetin, luteolin, oleocanthal, and meganatural-az and other phytochemicals such as huperzine A, limonoids, azaphilones, and aged garlic extract. Finally, we revise the nutraceutical formulae BrainUp-10 composed of Andean shilajit and B-complex vitamins, with memory enhancement activity and the control of neuropsychiatric distress in AD patients. This integrated view on nutraceutical opens a new pathway for future investigations and clinical trials that are likely to render some results based on medical evidence.

Palabras clave

Palabras clave de autor: Alzheimer's disease; anti-tau molecules; disease prevention and treatment; mechanisms; multitarget approaches; nutraceutical compounds

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