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**ROLE OF BIOACTIVE COMPOUNDS IN THE PATHOLOGY OF
ALZHEIMER'S DISEASE**

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ABSTRACT

Bioactive compounds have garnered significant attention in the study of Alzheimer's disease (AD) due to their potential in modulating the pathological processes involved in the disorder. These naturally occurring substances, found in plants, foods, and medicinal herbs, exhibit antioxidant, anti-inflammatory, and neuroprotective properties, which are crucial in combating the oxidative stress, neuroinflammation, and neuronal damage associated with AD. Compounds such as polyphenols, flavonoids, and alkaloids can inhibit the formation and aggregation of β -amyloid plaques, a hallmark of Alzheimer's pathology, thereby protecting neuronal integrity. The therapeutic potential of these bioactive compounds lies in their multi-targeted approach, addressing several pathological aspects of AD simultaneously. However, challenges such as bioavailability, optimal dosing, and long-term safety need to be addressed through further research. Understanding the role of bioactive compounds in Alzheimer's pathology could lead to the development of novel, non-toxic therapeutic strategies, offering hope for the prevention or mitigation of this debilitating disease.