

Review > Arch Iran Med. 2021 Mar 1;24(3):233-252. doi: 10.34172/aim.2021.35.

Prospects of Saffron and its Derivatives in Alzheimer's Disease

Nadia Zandi ¹, Benyamin Pazoki ¹, Nazanin Momeni Roudsari ², Naser-Aldin Lashgari ²,
Vahid Jamshidi ², Saeideh Momtaz ^{3 4 5}, Amir Hossein Abdolghaffari ^{2 3 4 5},
Shahin Akhondzadeh ⁶

Affiliations

PMID: 33878882 DOI: [10.34172/aim.2021.35](https://doi.org/10.34172/aim.2021.35)

Abstract

Alzheimer's disease (AD) is a progressive neurodegenerative disorder and the most common form of dementia in the old age population, making it a worldwide concern. Unfortunately, few drugs have been presented for treatment of mild and moderate AD. To meet this need, more effective anti-AD agents are emerging. Accumulating evidence supports the beneficial roles of natural-based products in brain function, neurotransmission, neurogenesis, synaptogenesis, and the prevention of amyloid fibrillation and neuronal injury. Several *in vitro*, preclinical, and clinical studies suggest that saffron (its bioactive compounds) is a potential nutraceutical with antioxidant, radical scavenging, anti-inflammatory, hypolipidemic, hypotensive, neuroendocrine, and neuroprotective effects. It has also been proposed that saffron may delay the onset of AD, prevent its progression or help to attenuate the symptoms of the disease. Therefore, we performed a comprehensive search on this plant and its derivatives for AD treatment. Saffron and its active constituents interfere with AD by improving learning behavior, spatial memory, and cognitive function; protecting against neuronal loss; inhibiting beta-amyloid aggregation and neurotoxicity; preventing senile plaques and neurofibrillary tangle (NFT) formation; suppressing the acetylcholinesterase (AChE) activity; and reducing neuroinflammation. Given conclusive scientific findings, saffron and its derivatives might counter neurodegenerative diseases through multiple pathways. Further clinical trials are expected to confirm the neuroprotective properties of this herb and also to translate such findings to improve patients' outcomes.

Keywords: Acetylcholinesterase inhibitors; Alzheimer's disease; Amyloid beta; Apolipoprotein E; Neurofibrillary tangles; Saffron.

© 2021 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Related information

[MedGen](#)

LinkOut - more resources

Other Literature Sources

[scite Smart Citations](#)

Medical

[Genetic Alliance](#)

[MedlinePlus Health Information](#)