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Melissa officinalis, a Plant with Potential Medicinal Properties: A comprehensive review on its Pharmacological activities †

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Abstract: *Melissa officinalis* (*M. officinalis*) is one of the most used traditional herbs in various countries. Various studies have proved its vivid pharmacological activities and have attracted researchers for its clinical use. This review is designed to provide a comprehensive knowledge of *M. officinalis* in its phytochemical constituents, pharmacological activities, complications, and safety. A detailed survey was carried out, including published research articles using PubMed, Google Scholar, and other search engines such as cited and Medline. The data was also collected from various traditional medicinal books of different countries and conference proceedings. Nearly 180 research articles and review articles were scrutinized. *M. officinalis* is traditionally used in many countries for nervous system disorders like dementia, epilepsy, paralysis, stroke, tremor, migraine, and vertigo, along with usage for enhancing memory, sedative, and antidote effect. Phytochemistry studies have explored various chemical constituents belonging to essential oils, triterpenes and phenolic acid in *M. officinalis*. Pharmacological studies have revealed anti-inflammatory, neuroprotective, memory enhancer, antioxidant, cardiovascular, and many other properties of *M. officinalis* through preclinical and clinical studies. *M. officinalis* has also been proved as an acetylcholinesterase inhibitor for treating Alzheimer's disease. *M. officinalis* has also shown potential activity as an anti-stress and anti-anxiety agent. Also, it could be a potential therapeutic target for various diseases as mentioned above. There is a need to explore more on identifying potential molecules and fractions from *M. officinalis* for its clinical use. Extensive scientific evidence is still essential from *in vitro* and *in vivo* preclinical studies and clinical trials on its effects and safety.

Keywords: *Melissa offinalis*; central nervous system; Alzheimer's disease; memory; spinal cord injury.

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Conflicts of Interest

The authors declare no conflict of interest.