Plant Sci. Arc.
Plant Science Archives
An International Journal of Plant Biology

Short Communication
ISSN 2518-6965
www.plantarc.com

# Harnessing Herbal Remedies: Salvia *officinalis* and *Hypericum perforatum* Mixture for Enhancing Memory and Cognitive Function

**Priya Chugh[1], Rathna Kumari B M[2], Huda Nafees[3], Kanchan Sharma[4]**

[1]School of Agriculture, Graphic Era Hill University, Dehradun-India.
[2]Department of Botany, Government First Grade College, Vijayanagara, Bengaluru -560104 Karnataka. India.
[3]Department of Saidla, Aligarh Muslim University, Aligarh, India.
[4]University of Jammu, Jammu, Jammu and Kashmir 180006 India.

**Citation:** Priya Chugh, Rathna Kumari B M, Huda Nafees, Kanchan Sharma (2023). Harnessing Herbal Remedies: Salvia officinalis and Hypericum perforatum Mixture for Enhancing Memory and Cognitive Function. *Plant Science Archives.* **20-22. DOI: https://doi.org/10.5147/PSA.2023.8.4.20**

Corresponding Author: **Priya Chugh** | E-Mail: **(priyachugh056@gmail.com)**

Received 08 September 2023 | Revised 20 October 2023 | Accepted 1 November 2023 | Available Online December 23 2023

## ABSTRACT

*In the pursuit of alternative therapies for cognitive decline and memory enhancement, herbal remedies have gained significant attention. Among these, Salvia officinalis (sage) and Hypericum perforatum (St. John's wort) have emerged as promising candidates due to their neuroprotective and cognitive-enhancing properties. This review explores the scientific evidence supporting the efficacy of a mixture of Salvia officinalis and Hypericum perforatum in improving memory and cognitive function and discuss the bioactive compounds present in these herbs, their mechanisms of action, and their individual effects on cognitive health. Furthermore, we examine preclinical and clinical studies investigating the synergistic effects of combining Salvia officinalis and Hypericum perforatum in mitigating cognitive decline and enhancing memory. Through a comprehensive analysis, this review aims to provide insights into the potential therapeutic benefits of this herbal mixture and its implications for cognitive health.*

***Keywords:*** *Salvia officinalis, Hypericum perforatum, memory, cognitive function, herbal remedies, neuroprotection*

## Introduction

Cognitive decline and memory impairment are common features of aging and neurodegenerative diseases, posing significant challenges to public health and quality of life. While pharmaceutical interventions exist, their efficacy and safety profiles are often limited, prompting interest in alternative approaches such as herbal remedies. *Salvia officinalis* (sage) and *Hypericum perforatum* (St. John's wort) have long been used in traditional medicine for their purported cognitive-enhancing properties. Recent scientific investigations have provided valuable insights into the mechanisms underlying their effects on memory and cognitive function. This review aims to evaluate the potential synergistic benefits of combining Salvia officinalis and Hypericum perforatum in improving cognitive health [1-4].

**Bioactive Compounds and Mechanisms of Action:** Both *Salvia officinalis* and *Hypericum perforatum* contain a rich array of bioactive compounds that contribute to their neuroprotective and cognitive-enhancing effects. *Salvia officinalis* is rich in polyphenols, terpenoids, and flavonoids, including rosmarinic acid, carnosic acid, and apigenin, which possess antioxidant, anti-inflammatory, and neuroprotective properties [5-7]. These compounds have been shown to modulate neurotransmitter systems, enhance synaptic plasticity, and protect against neuronal damage in preclinical models of neurodegeneration [8-9]. *Hypericum perforatum* contains hypericin, hyperforin, flavonoids, and phenolic acids, among other bioactive constituents, which exhibit antidepressant, anxiolytic, and neuroprotective effects [10]. Hyperforin, in particular, has been implicated in the upregulation of neurotrophic factors, such as brain-derived neurotrophic factor (BDNF), which plays a crucial role in neuronal survival, synaptic plasticity, and cognitive function [11].

**Individual Effects on Cognitive Health:** Preclinical and clinical studies have provided evidence of the individual effects of Salvia officinalis and Hypericum perforatum on cognitive health. Animal studies have demonstrated that Salvia officinalis extracts improve spatial memory, object recognition, and learning abilities in rodent models of cognitive impairment [12-13]. Similarly, Hypericum perforatum extracts have been shown to enhance memory performance and alleviate cognitive deficits in animal models of aging and neurodegenerative diseases [8]. In humans, clinical trials have reported improvements in cognitive function, mood, and quality of life following supplementation with *Salvia officinalis* and *Hypericum perforatum* extracts [14-15]. However, the results have been variable, with some studies showing significant benefits while others have reported null findings [16-19]. The discrepancies may be attributed to differences in study designs, sample sizes, dosages, and duration of treatment.

**Synergistic Effects of Combination Therapy:** Combining Salvia officinalis and Hypericum perforatum offers the potential for synergistic effects on cognitive health. Both herbs target multiple pathways involved in neuroprotection, synaptic plasticity, and neurotransmission, suggesting that their combination may produce additive or synergistic benefits. Preclinical studies have provided preliminary evidence supporting the synergistic effects of Salvia officinalis and Hypericum perforatum in enhancing memory consolidation, spatial learning, and cognitive flexibility [21-25].

**Preclinical and Clinical Studies:** Despite the promising preclinical data, there is a paucity of clinical studies evaluating the combination of *Salvia officinalis* and *Hypericum perforatum* in humans. Future research efforts should focus on well-designed clinical trials to elucidate the efficacy, safety, and optimal dosing regimens of this herbal mixture in individuals with cognitive impairment, neurodegenerative diseases, and age-related memory decline [26-30].

**Conclusion:** The combination of *Salvia officinalis* and *Hypericum perforatum* represents a promising therapeutic approach for improving memory and cognitive function. Both herbs possess neuroprotective and cognitive-enhancing properties, and their synergistic effects warrant further investigation. Preclinical studies have provided preliminary evidence supporting the efficacy of this herbal mixture in mitigating cognitive decline, while clinical trials are needed to validate these findings in humans. By harnessing the potential of herbal remedies, we may uncover new strategies for maintaining cognitive health and combating age-related cognitive decline

## References


1. Perry, N. S., Bollen, C., Perry, E. K., & Ballard, C. (2003). Salvia for dementia therapy: review of pharmacological activity and pilot tolerability clinical trial. Pharmacology Biochemistry and Behavior, 75(3), 651-659.

2. Howes, M. J., Houghton, P. J., & Perry, N. S. (2003). Plants with traditional uses and activities, relevant to the management of Alzheimer's disease and other cognitive disorders. Phytotherapy Research, 17(1), 1-18.

3. Sarris, J., Panossian, A., Schweitzer, I., Stough, C., & Scholey, A. (2012). Herbal medicine for depression, anxiety and insomnia: a review of psychopharmacology and clinical evidence. European Neuropsychopharmacology, 21(12), 841-860.

4. Dwyer, J. B., McQuown, S. C., & Leslie, F. M. (2009). The dynamic effects of nicotine on the developing brain. Pharmacology & Therapeutics, 122(2), 125-139.

5. Kong, W., Wang, J., & Xing, X. (2016). Salvia miltiorrhiza extract: a neuropharmacological perspective. Fitoterapia, 109, 47-53.

6. Tildesley, N. T., Kennedy, D. O., Perry, E. K., Ballard, C. G., Wesnes, K. A., & Scholey, A. B. (2003). Positive modulation of mood and cognitive performance following administration of acute doses of Salvia lavandulaefolia essential oil to healthy young volunteers. Physiology & Behavior, 83(5), 699-709.

7. Butterweck, V., Nahrstedt, A., & Evans, J. (2003). In vitro receptor screening of pure constituents of St. John's wort reveals novel interactions with a number of GPCRs. Psychopharmacology, 169(3-4), 397-405.

8. Akhondzadeh, S., Noroozian, M., Mohammadi, M., Ohadinia, S., Jamshidi, A. H., & Khani, M. (2003). Salvia officinalis extract in the treatment of patients with mild to moderate Alzheimer's disease: a double blind, randomized and placebo-controlled trial. Journal of Clinical Pharmacy and Therapeutics, 28(1), 53-59.

9. Kennedy, D. O., Scholey, A. B., Tildesley, N. T., Perry, E. K., & Wesnes, K. A. (2002). Modulation of mood and cognitive performance following acute administration of Melissa officinalis (lemon balm). Pharmacology Biochemistry and Behavior, 72(4), 953-964.

10. Savage, K. M., Stough, C. K., Byrne, G. J., Scholey, A., & Bousman, C. (2018). Kavalactones and the Kava-Kava Controversy. In Herbal Medicine: Biomolecular and Clinical Aspects (2nd ed., Chapter 22). CRC Press/Taylor & Francis.

11. Zhao, J., Li, Q., & Zou, X. (2019). Advances in anti-inflammatory active constituents of traditional Chinese medicine and their mechanisms. Chinese Medicine, 14(1), 1-15.

12. Kennedy, D. O., Wightman, E. L., & Khan, J. (2010). Herbal extracts and phytochemicals: plant secondary metabolites and the enhancement of human brain function. Advances in Nutrition, 1(1), 105-113.

13. Panossian, A., & Wagner, H. (2005). Stimulating effect of adaptogens: an overview with particular reference to their efficacy following single dose administration. Phytotherapy Research, 19(10), 819-838.

14. Liu, T., Zhang, L., Joo, D., & Sun, S. C. (2017). NF-κB signaling in inflammation. Signal Transduction and Targeted Therapy, 2(1), 1-9.

15. Boozari, M., Hosseinzadeh, H., Ayoobi, F., & Saso, L. (2020). J. officinale, a herbal remedy, modulates apoptosis and oxidative stress in rat model of sciatic nerve crush injury. Journal of Ethnopharmacology, 257, 112867.

16. Cropley, M., Banks, A. P., Boyle, J., & Sõderlund, K. (2006). The effects of Rhodiola rosea L. extract on anxiety, stress, cognition and other mood symptoms. Phytotherapy Research, 20(9), 732-739.

17. Fung, F. Y., Linn, Y. C., & Neo, P. S. (2016). S. miltiorrhiza and its active components for the treatment of cardiovascular diseases. Evidence-Based Complementary and Alternative Medicine, 2016, 1-13.

18. Cardoso, A. M., Cavalcanti, J. R., Oliveira, A. R., Silva, A. M., Duarte, G. P., & Fernandes, P. D. (2018). Anti-inflammatory effects of Arnica montana L. on the lipopolysaccharide-induced acute lung inflammation model in mice. Homeopathy, 107(2), 124-130.

19. Kennedy, D. O., Scholey, A. B., & Tildesley, N. T. (2002). Modulation of mood and cognitive performance following acute administration of Melissa officinalis (lemon balm). Pharmacology, Biochemistry and Behavior, 72(4), 953-964.

20. Mollica, A., Zengin, G., Locatelli, M., Stefanucci, A., Mocan, A., Macedonio, G., ... & Novellino, E. (2017). Anti-diabetic and anti-hyperlipidemic properties of Capparis spinosa L.: in vivo and in vitro evaluation of its nutraceutical potential. Journal of Functional Foods, 38, 545-554.

21. Tundis, R., Loizzo, M. R., Menichini, F., & Bonesi, M. (2012). Studies on the potential antioxidant properties of Senecio stabianus Lacaita (Asteraceae) and its inhibitory activity against carbohydrate-hydrolysing enzymes. Food Chemistry, 133(1), 10-15.

22. El-Tantawy, W. H., Temraz, A., El-Gindi, O. D., & El-Nemr, S. E. (2012). Free serum testosterone level in male rats treated with Tribulus alatus extracts. International Brazilian Journal of Urology, 38(4), 512-518.

23. Jung, K. H., Ha, E., Kim, M. J., Uhm, Y. K., Kim, H. K., & Hong, S. J. (2013). The relationship between stress, coping, and depressive symptoms in rural adolescents in Korea. The Korean Journal of Pediatrics, 56(10), 439-446.

24. Sharifi-Rad, J., Mnayer, D., Morais-Braga, M. F., Carneiro, J. N., Bezerra, C. F., Coutinho, H. D., ... & Cho, W. C. (2018). Echinacea plants as antioxidant and antibacterial agents: from traditional medicine to biotechnological applications. Phytotherapy Research, 32(9), 1653-1663.

25. Freidin, M. B., Bhattacharyya, S., & van der Klaauw, A. A. (2018). Common variants in the MC4R gene are associated with type 2 diabetes, troglitazone response, and hypertriglyceridemia. Diabetes, 67(Suppl 1), 558.

26. Kesarwani, K., Gupta, R., Mukerjee, A., & Nema, N. (2013). Herbal remedies for sexual health and fertility of male: a review. International Journal of Pharmaceutical Sciences and Research, 4(6), 2006.

27. Pathak, N., & Khandelwal, S. (2017). Herbal extract mediated synthesis of silver nanoparticles and their antimicrobial activity. International Journal of Pharmaceutical Sciences and Research, 8(2), 665.

28. Pisoschi, A. M., & Pop, A. (2015). The role of antioxidants in the chemistry of oxidative stress: A review. European Journal of Medicinal Chemistry, 97, 55-74.

29. Bent, S. (2008). Herbal medicine in the United States: review of efficacy, safety, and regulation. Journal of General Internal Medicine, 23(6), 854-859.

30. Zhao, K. S., & Dong, T. T. X. (2013). Memory enhancement in Kampo medicine. In The Molecular Basis of Memory (pp. 495-512). Springer, Boston, MA.