

Lemon Balm for anxiety and depression

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Recent evidence published in *Phytotherapy Research* indicates that *Melissa officinalis* (lemon balm) may be safe and effective for improving anxiety and depression symptoms, particularly in the acute setting ([1]).

A systematic review and meta-analysis including 10 randomised controlled trials involving 632 participants compared placebo or standard medication against various lemon balm preparations, with doses ranging from 300 mg to 5,000 mg per day. The duration of lemon balm administration varied from a single dose to 56 days.

In this meta-analysis, lemon balm was shown to significantly reduce mean depression and anxiety scores compared to placebo. Subgroup analysis showed statistically significant results for acute anxiety. Lemon balm was well tolerated by participants, with no significant adverse events reported.

The shortest duration of oral lemon balm therapy that improved anxiety disorders was 5-7 days ([2],[3]). A single oral dose of 300 mg in healthy individuals improved state anxiety scores and memory performance at 1 and 3 hours post-intervention ([4]). However, to improve depression symptoms, more extended periods of between 10 days and 8 weeks were required ([5],[6]).

Only one included study compared lemon balm to standard medication. In this study, lemon balm (1,000 mg, twice daily) was as effective as fluoxetine (10 mg twice daily) for improving depression scores in patients with mild to moderate depression and had fewer side effects than the antidepressant medication ([6]).

Lemon balm's anxiolytic and antidepressant effects are attributed to its phenolic and flavonoid constituents, mainly rosmarinic acid. In animal studies, rosmarinic acid has been shown to upregulate gamma-aminobutyric acid (GABA) by inhibiting the enzyme GABA transaminase (GABA-T) ([7]) and reduce serum corticosterone levels, potentially contributing to the reduction in

anxiety ([8]). The antidepressant action of rosmarinic acid may occur via effects on the serotonergic pathway ([9]) and hippocampal brain-derived neurotrophic levels ([10]). In addition, lemon balm's other bioactive constituents may offer neural protection due to their anti-inflammatory and free radical scavenging actions ([11]).

The findings of the current meta-analysis are limited by the high level of statistical heterogeneity between studies. However, given lemon balm's long history of traditional use for anxiety and depression and promising results from human clinical trials, further studies using standardised extracts are warranted to determine the effective dose and treatment duration in clinical and sub-clinical populations.

References

- 1 Ghazizadeh J, Sadigh-Eteghad S, Marx W, Fakhari A, Hamedeyazdan S, Torbati M, Taheri-Tarighi S, Araj-khodaei M, Mirghafourvand M. The effects of lemon balm (*Melissa officinalis* L.) on depression and anxiety in clinical trials: A systematic review and meta-analysis. *Phytotherapy Research*. 2021 Aug 27.
- 2 Saeidi J, Khansari Z, Tozandejani H. The effectiveness of *Melissa officinalis* and *Lavandula angustifolia* in Anxiety of Oil Company Employees. *Journal of Sabzevar University of Medical Sciences*. 2020 Feb 20;26(6):687-94.
- 3 Soltanpour A, Alijaniha F, Naseri M, Kazemnejad A, Heidari MR. Effects of *Melissa officinalis* on anxiety and sleep quality in patients undergoing coronary artery bypass surgery: A double-blind randomized placebo controlled trial. *European Journal of Integrative Medicine*. 2019 Jun 1;28:27-32.
- 4 Scholey A, Gibbs A, Neale C, Perry N, Ossoukhova A, Bilog V, Kras M, Scholz C, Sass M, Buchwald-Werner S. Anti-stress effects of lemon balm-containing foods. *Nutrients*. 2014 Nov;6(11):4805-21.
- 5 Beihaghi M, Yousefzade S, Mazloom SR, Modares Gharavi M, Hamedi SS. The Effect of *Melissa Officinalis* on Postpartum Blues in Women Undergoing Cesarean Section. *Journal of Midwifery and Reproductive Health*. 2019;7(2):1636-43.
- 6 Araj-Khodaei M, Noorbala AA, Yarani R, Emadi F, Emaratkar E, Faghihzadeh S, Parsian Z, Alijaniha F, Kamalinejad M, Naseri M. A double-blind, randomized pilot study for comparison of *Melissa officinalis* L. and *Lavandula angustifolia* Mill. with Fluoxetine for the treatment of depression. *BMC complementary medicine and therapies*. 2020 Dec;20(1):1-9.
- 7 Yoo DY, Choi JH, Kim W, Yoo KY, Lee CH, Yoon YS, Won MH, Hwang IK. Effects of *Melissa officinalis* L.(lemon balm) extract on neurogenesis associated with serum corticosterone and GABA in the mouse dentate gyrus. *Neurochemical research*. 2011 Feb;36(2):250-7.
- 8 Ghazizadeh J, Hamedeyazdan S, Torbati M, Farajdokht F, Fakhari A, Mahmoudi J, Araj-khodaei M, Sadigh-Eteghad S. *Melissa officinalis* L. hydro-alcoholic extract inhibits anxiety and depression through prevention of central oxidative stress and apoptosis. *Experimental physiology*. 2020 Apr;105(4):707-20.
- 9 Lin SH, Chou ML, Chen WC, Lai YS, Lu KH, Hao CW, Sheen LY. A medicinal herb, *Melissa officinalis* L. ameliorates depressive-like behavior of rats in the forced swimming test via regulating the serotonergic neurotransmitter. *Journal of ethnopharmacology*. 2015 Dec 4;175:266-72.
- 10 Jin X, Liu P, Yang F, Zhang YH, Miao D. Rosmarinic acid ameliorates depressive-like behaviors in a rat model of CUS and Up-regulates BDNF levels in the hippocampus and hippocampal-derived astrocytes. *Neurochemical research*. 2013 Sep;38(9):1828-37.
- 11 Miraj S, Azizi N, Kiani S. A review of chemical components and pharmacological effects of *Melissa officinalis* L. *Der Pharmacia Lettre*. 2016;8(6):229-37.