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**File: ■ Lemon Balm (*Melissa officinalis*, Lamiaceae)**  
■ Heart Palpitations  
■ Efficacy and Safety

**HC 071556-537**

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**RE: Aqueous Lemon Balm Extract Alleviates Benign Heart Palpitations**

Alijaniha F, Naseri M, Afsharypuor S, et al. Heart palpitation relief with *Melissa officinalis* leaf extract: double blind, randomized, placebo controlled trial of efficacy and safety. *J Ethnopharmacol.* 2015;164:378-384.

Benign heart palpitations—the feeling of a rapid, pounding, or fluttering heart—can cause distress and disability. Currently available therapies are not very effective and have unwanted side effects. In traditional Iranian medicine, lemon balm (*Melissa officinalis*, Lamiaceae) leaf extract is used as a heart tonic and to help ease tension, restlessness, and irritability. According to the authors, no clinical trials evaluating lemon balm as a treatment for heart palpitations have been published. Hence, the purpose of this randomized, double-blind, placebo-controlled study was to evaluate the efficacy of lemon balm in relieving benign heart palpitations.

Adults (n = 71, aged 18-60 years) with an "unpleasant sensation in the heart or awareness of heartbeat" were recruited at the outpatient clinic of the cardiology department at Shahid Mostafa Khomeini Hospital in Tehran, Iran, from November 2012 to May 2013. Included patients had palpitations as their main complaint for ≥ 3 months. Excluded patients had intellectual disability, psychosis, or other serious psychiatric disorders; organic heart disease; a serious chronic disease; endocrine problems; were pregnant; were lactating; or consumed beta-blockers, antidepressants, anxiolytics, hypnotic inducers, or sedatives 10 days before study commencement. Patients received placebo or 1000 mg lemon balm extract/day for 2 weeks. Lemon balm dried leaf was purchased from the farm of Zardband Pharmaceutical Co.; Gonbad, Iran. The material was authenticated and a voucher specimen was filed at the herbarium of the Traditional Medicine and Materia Medica Research Center, Shahid Beheshti University of Medical Sciences; Tehran, Iran. "Quality control tests were done according to British Pharmacopoeia [*sic*] (2009)." A lyophilized aqueous extract of 100 g lemon balm leaves was prepared, yielding 20.9 g (20.9%) dried extract. This procedure "was done proportionally to obtain the required amount of dried extract for 28 patients ... ." Capsules were filled with 500 mg of the dried extract. The placebo was bread crumbs filled in identical capsules. Patients were instructed to take 1 capsule in the morning and 1 capsule in the evening.

Palpitations are a subjective complaint, and there is no accurate tool to make quantitative measurements. There are no validated patient-reported outcome instruments available. The

primary outcome measures were a change in the frequency and intensity of the palpitation episodes over 24 hours. Each day, patients completed a questionnaire about their symptoms and an adverse effects form. Patients started monitoring the palpitations 1 week before treatment began to offset the increased attention to heartbeats, which could create bias. Psychiatric symptoms were measured with the General Health Questionnaire-28 (GHQ-28) at baseline and after treatment. Blood was drawn before and after treatment to monitor safety.

Baseline demographic and physical characteristics such as blood pressure and heart rate were similar between groups. Only 5 patients were diagnosed with a cardiac disorder as the cause of palpitations. Panic disorder, which can cause palpitations, occurred in 66.6% of the placebo group and 71.4% of the lemon balm group. Tea (*Camellia sinensis*, Theaceae), coffee (*Coffea arabica*, Rubiaceae), and cigarette consumption, which can cause heart palpitations, were used at a similar rate in both groups. In both groups, 85% of the patients had moderate to much distress about the palpitations. The mean duration of occurrence of palpitation episodes was 65 months in the placebo group and 60 months in the lemon balm group. Eight patients in each group discontinued treatment (reasons not reported), so 27 placebo and 28 lemon balm patients were included in the final analysis.

After treatment, the lemon balm group had 36.8% fewer palpitation episodes compared to baseline ( $P < 0.0001$ ), while no significant change was seen in the placebo-treated patients; the difference between the groups was significant ( $P = 0.01$ ). Both groups had a significant decrease in intensity of palpitations; there was no significant difference between groups. Anxiety and insomnia after treatment were significantly decreased in the lemon balm group compared to baseline ( $P = 0.004$ ), but not in the placebo group. (The  $P$  value for the difference between groups was not reported.) There were no clinically significant adverse effects and no significant changes in laboratory parameters. The lemon balm group had a significant increase in appetite compared with the placebo group. There were no other significant differences in frequency of adverse effects.

The authors conclude that 2 weeks of treatment with lemon balm safely and significantly decreased frequency of episodes and anxiety in patients with benign heart palpitations likely caused by psychological factors. Acknowledged limitations of this study are the short duration of treatment, only 1 dose was evaluated, the sample size was small, and detailed psychological evaluations of anxiety and depression were not conducted. The authors point out that lemon balm has many other clinically demonstrated benefits and that these results support the prescriptions that the renowned Persian physician Avicenna made over 1,000 years ago—that lemon balm is beneficial for heart conditions and mental health. Although aqueous lemon balm extract has been reported to reduce heart rate without changing contractile force in rats, no effect on heart rate was detected in this relatively small study. Larger trials of longer duration are warranted to confirm these findings and to further evaluate the effect on heart rate, as well as to determine whether treatment effect varies with the clinical presence and severity of panic disorder or anxiety.

—Heather S. Oliff, PhD

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