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## Effects of a hops (*Humulus lupulus* L.) dry extract supplement on self-reported depression, anxiety and stress levels in apparently healthy young adults: a randomized, placebo-controlled, double-blind, crossover pilot study

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### Abstract

**Objective:** The *Humulus lupulus* L. plant (hops) is used as a herbal medicinal product for anxiety/mood disorders. Our aim was to study the effects of a hops dry extract on self-reported depression, anxiety and stress levels in young adults.

**Design:** Apparently healthy young adults from our university completed the Depression Anxiety Stress Scale-21 (DASS-21) and those reporting at least mild depression, anxiety and stress were invited to complete the study intervention. This followed a randomized (1:1), placebo-controlled, double-blind, crossover design with two 4-week intervention periods (Melcalin hops or placebo; two 0.2 gr capsules once daily) separated by a 2-week wash-out. Anthropometric measurements, DASS-21 assessments and measurements of morning cortisol plasma levels were performed at the beginning and the end of the 4-week treatment periods.

**Results:** 36 participants (Females/Males: 31/5; age: 24.7±0.5 years) completed the study intervention (attrition: 6/42). No significant changes in body weight and composition or morning circulating cortisol were noted with the hops or placebo. Significantly decreased DASS-21 anxiety, depression and stress scores were documented with hops (9.2±7.3 vs. 5.1±5.9, 11.9±7.9 vs. 9.2±7.4, and 19.1±8.1 vs. 11.6±8.1; all p values <0.05), which were significantly greater compared to those caused by the placebo (all p values <0.05).

**Conclusion:** In otherwise healthy young adults reporting at least mild depression, anxiety and stress symptoms, daily supplementation with a hops dry extract can significantly improve all these symptoms over a 4-week period. These beneficial effects agree with the indication of hops for anxiety/mood disorders and restlessness, as approved by the German Commission E.

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