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# Probiotic enhanced immunity and mental wellbeing of generally healthy women: a randomised, placebo-controlled and double-blind study

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**Abstract** The elucidation of the gut-brain axis underscores the critical role of probiotics in enhancing mental wellbeing through immunomodulatory mechanisms. We thus aimed to investigate the effects of a probiotic *Lactiplantibacillus plantarum* Probio87 (orally administered one sachet/day; 9 log cfu/sachet) or placebo for 12-weeks, on immunity and brain health, via possible mechanisms of inflammation and neurotransmitter functions in a generally healthy women population. A parallel, randomised, double-blind and placebo-controlled study was performed in generally healthy women (n =112). Women were randomised to either the probiotic (n = 58, mean age 38.38 +/- 0.85 years) or placebo (n = 54, mean age 38.91 +/- 0.98 years) for 12-weeks. Immunity and mental wellbeing profiles were evaluated via questionnaires and blood gene expression profiles. Over the study period, the Probio87 group demonstrated a better impact on general women's health as compared to the control group, as measured by the Women's Health Questionnaire (WHQ), particularly in domains related to depressed mood, somatic symptoms, anxiety, sexual health, sleep, and menstrual health. The probiotic effects were exhibited later, typically after 6-weeks of intervention, taking over placebo effects that primarily faded off during early stages of the intervention. Regarding immunity, women in the Probio87 group exhibited upregulation of more immunity-related genes than those in the placebo group, primarily associated with NK cells and anti-inflammatory effects via IL-10. Additionally, Probio87 provided gut-brain axis benefits by enhancing the actions of neurotransmitters serotonin and GABA, while also balancing hunger and satiety. The probiotic *Lactiplantibacillus plantarum* Probio87 significantly improved general health, mood, anxiety, and sleep in a generally healthy women population over 12 weeks. It enhanced immune function through increased expression of immunity-related genes and positively modulated neurotransmitters involved in brain health. All these findings supported from our WHQ data, where the administration of probiotic improved domains related to depressed mood, anxiety, sexual behaviour and sleep problems. The study is registered at ClinicalTrials.gov under identifier number: NCT05302687.

## Keywords

**Author Keywords:** [Lactiplantibacillus plantarum](#); [immunity](#); [gut-brain-axis](#); [women](#)

**Keywords Plus:** [NEUROTROPHIC FACTOR](#); [MESSENGER-RNA](#); [NK CELLS](#); [EXPRESSION](#); [BRAIN](#); [GHRELIN](#); [ANXIETY](#); [STRESS](#); [SYSTEM](#); [GUT](#)

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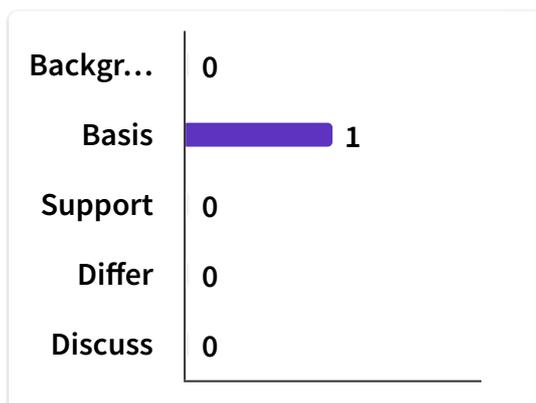
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