



[Back](#)

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

[Beneficial Microbes](#) • Article • 2025 • DOI: 10.1163/18762891-bja00061

[Nisaa A.A.](#)<sup>a</sup>; [Mageswary U.](#)<sup>a</sup>; [Pei X.](#)<sup>b</sup>; [Kadir M.N.](#)<sup>c</sup>; [Oon C.E.](#)<sup>d</sup>; [+8 authors](#)

<sup>a</sup>School of Industrial Technology, Universiti Sains Malaysia, Penang, 11800, Malaysia

[Show all information](#)

2 82th percentile

Citations

1.60

FWCI

[Full text](#) [Export](#) [Save to list](#)

[Document](#)

[Impact](#)

[Cited by \(2\)](#)

[References \(77\)](#)

[Similar documents](#)

## 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 womens health as compared to the control group, as measured by the Womens 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. © 2025 A.A. Nisaa et al., 2025.

## Author keywords

gut-brain-Axis; immunity; inflammation; *Lactiplantibacillus plantarum*; women

## Indexed keywords

### MeSH

Adult; Double-Blind Method; Female; Gastrointestinal Microbiome; Healthy Volunteers; Humans; Immunity; *Lactobacillus plantarum*; Mental Health; Middle Aged; Probiotics; Surveys and Questionnaires; Women's Health

### EMTREE drug terms

interleukin 10; neurotransmitter; placebo; probiotic agent; probiotic agent

### EMTREE medical terms

adult; antiinflammatory activity; anxiety disorder; Article; bacterial immunity; brain function; brain-gut axis; controlled study; data analysis; depression; disease association; double blind procedure; drug effect; drug use; female; GABAergic system; gene expression profiling; gene identification; genetic association; human; hunger; *Lactobacillus plantarum*; major clinical study; menstrual cycle; middle aged; mood disorder; natural killer cell; nervous system inflammation; nonhuman; parallel design; psychological well-being; psychosomatic symptom; questionnaire; randomized controlled trial; satiety; sexual dysfunction; sexual health; sleep disorder; sleep parameters; treatment duration; upregulation; women's health; Women's Health

Questionnaire; World Health Organization; immunity; intestine flora; Lactobacillus plantarum; mental health; normal human

## Funding details

Details about financial support for research, including funding sources and grant numbers as provided in academic publications.

Funding sponsor	Funding number	Acronym
Universiti Sains Malaysia <a href="#">See opportunities by USM</a> ↗	304/PTEKIND/6501096	USM
Universiti Sains Malaysia <a href="#">See opportunities by USM</a> ↗		USM

### Funding text

We thank the Hospital Director of SASMEC@IIUM for granting permission to use patients' 2019 medical records, space and assets belonging to the hospital for this project. Probiotic and placebo products were courtesy of Probiotic Corp., Republic of Korea. This work was supported by the USM-Probiotic Grant (grant number 304/PTEKIND/6501096).

## Corresponding authors

Corresponding author E.H.E. Ismail

Affiliation Hospital Universiti Sains Malaysia, Kelantan, 16150, Malaysia

Email address enhusna@usm.my

Corresponding author A.S. Azizan

Affiliation Kulliyah of Medicine, International Islamic University Malaysia, Sultan Ahmad Shah Medical Centre, Pahang, 25200, Malaysia

---

Email address

azha@iium.edu.my

---

Corresponding  
author

M.T. Liong

---

Affiliation

School of Industrial Technology, Universiti Sains Malaysia, Penang, 11800,  
Malaysia

---

Email address

mintze.liong@usm.my

---

© Copyright 2025 Elsevier B.V., All rights reserved.

[Abstract](#)

[Author keywords](#)

[Indexed keywords](#)

[Funding details](#)

[Corresponding authors](#)

---

## About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

## Language

[日本語版を表示する](#)

[查看简体中文版本](#)

[查看繁體中文版本](#)

[Просмотр версии на русском языке](#)

## Customer Service

[Help](#)

[Tutorials](#)

[Contact us](#)

---

## ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗ [Cookies settings](#)

All content on this site: Copyright © 2026 [Elsevier B.V.](#) ↗, its licensors, and contributors. All rights are reserved, including those for text and data mining, AI training, and similar technologies. For all open access content, the relevant licensing terms apply.

