

## Roles of probiotics against HPV through the gut-vaginal axis

[Pei Xu<sup>1,2</sup>](#), [Uma Mageswary Mageswaran<sup>1</sup>](#), [Azka Ainun Nisaa<sup>1</sup>](#), [Shandra Devi Balasubramaniam<sup>3</sup>](#), [Deepa Rajendran<sup>4</sup>](#), [Engku Husna Binti Engku Ismail<sup>5</sup>](#), [Muhammad Nashriq Kadir<sup>5</sup>](#), [Chern-Ein Oon<sup>4</sup>](#), [Cheng-Siang Tan<sup>6</sup>](#), [Salina Binti Sany<sup>7</sup>](#), [Min Tze Liong<sup>1,8</sup>](#)

Affiliations [Expand](#)

### Abstract

Human papillomavirus (HPV) is a sexually transmitted virus, whose persistent infection is the main reason for invasive cervical cancer (ICC), which is the fourth most common type of cancer in women, with more than 500 000 new cases every year. After infection, various alterations occur in the host, facilitating the virus's evasion of immune system clearance and promoting its proliferation. Oral probiotic consumption can influence the whole body's immunity, inflammatory reflection, neural, endocrine humoral, metabolic pathways and other organs by adjusting the components of gut microbiota (GM). Some evidence shows there is a tight connection between GM and vaginal microbiota (VM), which is referred to as the gut-vaginal axis. This review investigates the potential role of probiotics in clearing HPV via the gut-vagina axis, emphasizing the effectiveness of *Lactobacillus* in preventing vaginal diseases and suggesting its potential for HPV clearance. Understanding the role of probiotics in the gut-vagina axis could pave the way for new strategies to reduce and eliminate HPV and related diseases.

**Keywords:** HPV clearance; gut-vaginal axis; oral administration; potential treatment; probiotics.