



## Microbial Biofilms

Challenges and Advances in Metabolomic Study

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# Chapter 7 - Metabolomic study of biofilm-forming natural microbiota of vaginal biofilm

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## Abstract

A biofilm is a microbiological community composed of cells that adhere to surfaces, interfaces, or one another and is encased in a matrix of artificial extracellular polymeric compounds synthesized. The human vagina is inhabited by a large variety of microbes that make up the typical microbiota and mycobiota. The vaginal microbiota may contain both beneficial and infectious bacteria, depending on its metabolomic context. Small molecule metabolites in the vagina may have an impact on human physiology and the makeup of the microbial community. These metabolites support the growth of biofilm-producing anaerobic bacteria, predominantly Gardnerella vaginalis, and are associated with other numerous anaerobes such as Atopobium vaginae, Prevotella Livia, Fusobacterium nucleatum, Porphyromonas, and Mobiluncus mulieris causing vaginal infections such as bacterial vaginosis (BV). The synthesis and alteration in metabolomic composition such as specific polyamines, carbohydrates, amino acids, organic acids, and lipids reduce the Lactobacillus dominance to a microbiota with diverse biofilm-producing anaerobes community playing a key role in the pathogenesis of BV.

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