
Menstrual products as disruptors of host-microbiota interactions ?

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Résumé

Vaginal microbiota exerts a major influence on women's health. Host-microbiota interactions and bacterial communities composition are intricately linked to vaginal health. A vaginal microbiota dominated by single species of *Lactobacillus*, has beneficial effects on host cells. In contrast, *Lactobacillus*-poor microbiota is associated with an increased risk of sexually transmitted infections (eg: HIV, HPV) and preterm birth. Availability, efficiency, and safety of menstrual products are key to women's health. Poor menstrual health management can have deleterious consequences, from decreasing school attendance to increasing the risk of urogenital infections and bacterial vaginosis. In France and in the EU menstrual products are considered as hygiene products. They are therefore not subject to strict composition restrictions and are exempt from post-commercialisation safety assessments. This study investigates the influence of pollutants detected in internal menstrual products on both key vaginal bacterial species and on vaginal cells.

The impact of chemicals presents in tampons on vaginal cells environment was assessed using a 3D raft culture model. This method utilizes transwells to mimic the vaginal epithelium. In parallel, the influence of pollutants on *Lactobacillus* and dysbiotic species fitness was evaluated using dynamic growth assay. These two technical approaches provide complementary insight into the effect of chemicals on vaginal environment.

Host tissue viability and immune response were evaluated under chemical exposure using transwells method and cytokines quantification. Influence of chemical compounds on *Lactobacillus* or *Gardnerella* interactions with host cells was also evaluated through their respective modulation of the host immune response. The effect of pollutants on vaginal bacteria species development was separately assessed by monitoring growth rate and fitness over 48 hours of exposure.

This project provides a first insight into the impact of menstrual products on vaginal microbiota and host-bacteria interactions, key components for women's health.

Key words: women's health, vaginal microbiota, host-microbiota interactions, menstrual products

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