

117 Competitive initial adhesion between *Lactobacillus* spp. and *Gardnerella vaginalis* strains against vaginal epithelium

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Bacterial vaginosis (BV) is a common disorder in women of reproductive age. BV is characterized by the replacement of vaginal lactobacilli, such as *Lactobacillus crispatus*, by predominantly anaerobic microorganisms. However, *Lactobacillus iners* is frequently found in the BV. *Gardnerella vaginalis*, commonly associated with BV, can also be present in 50-95% of BV patients and in 20-30% of healthy women. The capacity of *G. vaginalis* to form biofilms on the vaginal epithelium has recently been demonstrated. Our goal was to study the colonization of endogenous vaginal microflora from *Lactobacillus* spp. and *G. vaginalis* 5-1 (isolated from a healthy woman) and *G. vaginalis* 101 (isolated from a BV patient), at different initial concentrations and consequently to analyze the competition and interaction during the primary step of biofilm formation: initial adhesion. ME-180 and HeLa epithelial cell monolayers were challenged with the two *G. vaginalis* strains with different adhesion conditions. For the competition assays, cultures of *Lactobacillus casei*, *Lactobacillus crispatus* or *Lactobacillus iners* were mixed *G. vaginalis* strains at different concentrations and allowed to adhere to the two cell lines for 30 minutes. To analyse interference of lactobacilli in *G. vaginalis* initial adhesion, different lactobacilli concentrations were allowed to adhere to the cell monolayer for 4 hours and then *G. vaginalis* strains at different concentrations were added and allowed to adhere for 30 minutes. These adhesion times were previously optimized. All adhesion assays were quantified by fluorescence microscopy, using DAPI for total cell count and PNA-FISH probe for *G. vaginalis* quantification. Our results showed that *G. vaginalis* 101 (pathogenic strain) had a greater adhesion capacity than *G. vaginalis* 5-1 in all cases tested. Also, *L. casei* was the least adherent of the all lactobacilli used in this study. *L. casei* was included in this study as a non-sense control, since this lactobacilli strain is not a common colonizer of the vagina epithelium. *L. crispatus* showed decreased adherence to epithelial cells in the presence of *G. vaginalis* 101. In contrast, adherence of *L. iners* did not decrease in presence of *G. vaginalis* 101. Our study suggests that adherence of the *G. vaginalis* to epithelial cells is a critical step during the stage of vaginal colonization. It was found that adherence of *Lactobacillus* spp to epithelial cells was influenced by a specific *G. vaginalis* strains. These studies help to provide insight into the clinical situation in which indigenous vaginal lactobacilli can interfere with *G. vaginalis* presence.

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