

P50 – Biotherapeutic agents and vaginal health: effect of a combination of lactobacilli and lactoferrin

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Background: The human vagina is colonized by various microorganisms, the vaginal microbiota, which can have a significant impact on women health (1). Lactobacilli, representing the most abundant bacterial species of vaginal microbiota, accomplish various protective roles against pathogens resulting in the prevention of diseases such as bacterial vaginosis or aerobic vaginitis (2,3). During both these pathological conditions, pathogenic microorganisms replace the normal protective Lactobacilli. Unfortunately, the antibiotic treatments utilized for bacterial vaginal infections are not always effective, frequently leading to recurrence mainly due to antibiotic-resistance development of pathogens or to adverse effects on the beneficial microbiota. As a result, there is an increased interest in the development of alternative treatments using probiotics, such as *Lactobacillus spp.*, or natural antimicrobial substances that efficiently inhibit pathogenic bacteria and are safe.

Objective: This study aimed to evaluate the ability of two *Lactobacillus* strains (*L. acidophilus* GLA-14 and *L. rhamnosus* HN001) alone or in combination with bovine lactoferrin, a multifunctional glycoprotein of the innate immune system (Respecta® complex) to adhere to a model of vaginal epithelium and growth in biofilm *in vitro*. Moreover, as epithelial atrophy or desquamative inflammatory vaginitis are commonly observed in women with persistent aerobic vaginitis and epithelial cell damage has been associated with bacterial vaginosis, the ability of cell-free probiotic supernatants to increase vaginal cell viability was also analyzed.

Methodology: Conventional cultural methods were employed to growth cells and probiotics. Standard colorimetric methods were used to quantify cell viability and biofilm formation. Electron microscopy was used to characterize both biofilm structure and bacteria–cell interactions.

Results showed that supernatants from both *Lactobacillus* strains exert a beneficial effect on HeLa cells, an *in vitro* model widely used to study vaginal ecosystem (4). Moreover, both strains are able to grown in biofilm and exhibited aggregation and adherence properties to biotic or abiotic surfaces. In most cases these properties are modulated and increased by lactoferrin demonstrating the beneficial activity of this biotherapeutic agent combination.

Conclusions / Implications for practice: The combination of *Lactobacillus* strains and bovine lactoferrin used in this study represents an excellent candidate for use as prophylactic and therapeutic agent against urogenital infections, primarily vaginal ones.

References

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