P-040 - DEVELOPMENT OF AN IN VITRO VAGINAL EXUDATE ADHESION MODEL FOR BACTERIAL VAGINOSIS

Aliona Rosca[1]; Ana Paula Martins[1]; Joana Castro[1,2]; Nuno Cerca[1]

1 - Centre of Biological Engineering (CEB), Laboratory of Research in Biofilms Rosário Oliveira (LIBRO), University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal; 2 - Instituto de Ciências Biomédicas Abel Salazar (ICBAS), University of Porto, Rua de Jorge Viterbo Ferreira 228, 4050-313 Porto, Portugal

Background

Bacterial vaginosis (BV) is the worldwide leading vaginal disorder commonly recognized between menarche and menopause in women of all ethnicities. It is associated with serious health problems relating to both fertility and pregnancy. This dysbiosis is characterized by a reduction in lactic acid-producing bacteria, mainly *Lactobacillus* spp., accompanied by an overgrowth of strict or facultative anaerobic bacteria, predominantly *Gardnerella vaginalis*. However, *G. vaginalis* is also present in healthy women and its vaginal colonization does not always lead to BV. To better understand the complex interactions that occur between host and microorganisms, and as well as between microorganisms in the vaginal microenvironment, development of *in vitro* models that can simulate the *in vivo* conditions is required, since no adequate animal model exists.

Method

We developed a model that simulates the healthy vaginal mucosa, consisting of HeLa cells pre-coated with *Lactobacillus crispatus* and a chemically defined medium (CDM) known to mimic the female genital tract secretions. First, the ability of *L. crispatus* and *G. vaginalis* to grow in CDM was assessed and compared to growth in standard brain heart infusion medium. Then, in order to simulate BV development, an exclusion competitive initial adhesion assay was performed between *L. crispatus* and *G. vaginalis*. Additionally, the cytotoxic effect of *G. vaginalis* on the monolayer of HeLa cells, without the presence of *L. crispatus*, was also evaluated.

Results & Conclusions

L. crispatus and *G. vaginalis* were able to grow in the vaginal CDM. Importantly, a similar effect was observed in the known interference caused by *L. crispatus* in *G. vaginalis* adhesion to human epithelial cells. However, when *G. vaginalis* was added to the monolayer of epithelial cells without *L. crispatus*, it showed a great ability to adhere and induce cytotoxic changes in cell morphology of HeLa cells. This suggests that the tested vaginal CDM highlights known virulence factors in BV, confirming that using growth conditions more similar to the human vagina can help to identify specific mechanisms and factors that control bacterial populations within the female genital tract either in healthy or BV conditions.

References & Acknowledgments

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