Social interactions in mixed species biofilms

003 : *L. crispatus* Protects HeLa Cells Against *G. vaginalis* Cytotoxicity

Session C

Paula Martins[1], Joana Castro[1, 2], Aliona Rosca[1], Elisa Rodrigues[1], Nuno Cerca[1]*

[1]CEB, Universidade do Minho, Braga, [2]ICBAS, Universidade do Porto, Porto, Portugal

Bacterial vaginosis (BV) is the most common lower genital tract disorder among women of reproductive age and is characterized by a shift in the vaginal flora from the dominant *Lactobacillus* to a polymicrobial flora, being *Gardnerella vaginalis* the predominant species of the biofilm mass. However, *G. vaginalis* vaginal colonization does not always result in BV. Accurate *in vitro* model systems mimicking *in vivo* conditions are required to better understand the complex host-microbe and microbe-microbe interactions. In effort to analyse the adaptation and interaction of the commensal vaginal microbiota and pathogens in the vaginal environment, we used a genital tract simulant medium (mGTS) to evaluate the growth of resident vaginal *Lactobacillus crispatus* and *G. vaginalis* in the adopted growth medium. Also, to understand the differences between *G. vaginalis* strains isolated from women with and without BV, we performed *in vitro* assays to compare the virulence properties of *G. vaginalis* strains. In this sense, *G. vaginalis* strains were characterised for their cytotoxicity activity after adhesion on a monolayer of epithelial cells pre-adhered with *L. crispatus*, mimicking the healthy vagina environment. Furthermore, transcript levels of vaginolysin and sialidase genes were also evaluated. These assays revealed that a BV isolate of *G. vaginalis* was significantly more cytotoxic than a non-BV isolate after 3 hours in the contact with a monolayer of HeLa cells. However, when *L. crispatus* was pre-adhered on a monolayer of HeLa cells, the cytotoxicity effect of both strains observed was drastically reduced. Significant differences in the transcript levels of both genes were also observed in the presence of *L. crispatus*. Thus, this work highlights not only the discrepant virulence potential of two distinct variants of *G. vaginalis* but also the beneficial role of vaginal *lactobacilli* in protecting the vaginal epithelium from *G. vaginalis* infection.