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Abstract

Probiotic bacteria and pathobionts of the vaginal microbiota and their relationship with the human protozoan parasite Trichomonas vaginalis.

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Abstract:

The human vaginal tract harbours a large number of microbes believed to play an important role in influencing the outcome of vaginal infections. In recent years, studies have differentiated the natural vaginal microbiota into so called community state types (CST) I / II / III / V, which are dominated by different Lactobacillus species, whereas community state type IV is defined by a species-diversified composition of the microbiota and the absence of lactobacilli. The human protozoan Trichomonas vaginalis, the causative agent of the most prevalent non-viral sexually transmitted disease is commonly accompanied by CST-IV. Interestingly, CST-IV includes species associated with another common vaginal infection, bacterial vaginosis (BV). Both infections are associated with the transmission of human immunodeficiency virus (HIV) and gynaecological complications, which likely are a result from the disruption of the cervicovaginal epithelial barrier. However, key aspects of the complex interaction between the parasite and anaerobic bacteria of CST-IV associated with BV and the protective mechanisms of lactobacilli remain elusive. We showed that T. vaginalis and BV - associated bacteria (BVB) cooperatively interact to enhance paracellular permeability of the cervicovaginal epithelium by dysregulating Tight Junctions. Our group also reported that BVB increase the adhesion properties of a previously low adherent strain of T. vaginalis (G3) and that this effect is time-and contact-dependent. In addition, we reported that the inhibitory effects of Lactobacillus gasseri (CST-II) against the adhesion of T. vaginalis to host cells is contact-dependent as well and that bacterial surface proteins are largely responsible for this inhibitory phenotype. We found that the aggregation-promoting factor APF-2 from this bacterium significantly contributes to the inhibition of the adhesion of T. vaginalis to human vaginal ectocervical cells. Our studies highlight the importance of understanding the interaction between pathogens and the microbiota and their implications on human health and disease as well as to help develop novel and specific therapeutic strategies.

Biography:

Annabel Sabine Hinderfeld recently finished her PhD in Medical Microbiology and Parasitology at the University of Auckland. She completed her BSc in Biomedical Science and Molecular Biology at Murdoch University in Perth Western Australia and received her Master with Merit in Medical and Veterinary Microbiology at the University of Glasgow in Scotland. Annabel has 2 years' experience as Research assistant where she worked on developing a novel animal model for investigating Campylobacter jejuni infections and to characterizing BY-kinases. In addition, she holds a certificate as Specialist for GMP-compliance within the pharmaceutical industry. She was trained in immunological (FACS, ELISA, Cytokine Assays, Cell Culture etc.)as well as molecular biology techniques (several PCR techniques, qPCR, allelic exchange, EMSA, RNA and DNA work etc.). She is passionate about host-pathogen interaction and keen to understand the complex relationship with microbiota composition and disease outcome.

Recent Publications:

1. Annabel Sabine Hinderfeld, et al;CRISPR/Cas9-mediated gene modification and gene knock out in the human-infective parasite Trichomonas vaginalis;2020
2. Annabel Sabine Hinderfeld, et al; Trichomonas vaginalis; 2020
3. Annabel Sabine Hinderfeld, et al; Parasite and Vector of the Month; 2020

New Frontier's in Applied and Environmental Microbiology; April 24, 2020; London, UK

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