

## DISTURBANCES OF VAGINAL MICROBIOME COMPOSITION IN HUMAN PAPILLOMAVIRUS INFECTION AND CERVICAL CARCINOGENESIS: A QUALITATIVE SYSTEMATIC REVIEW

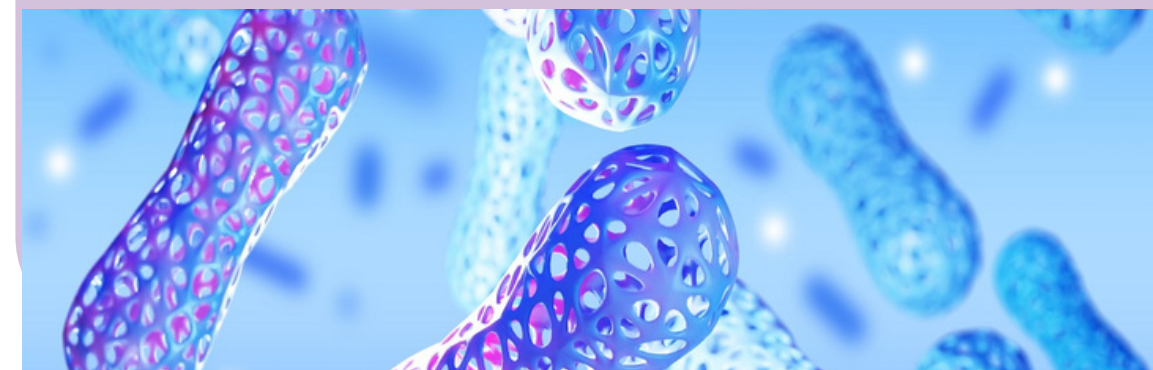
Wu, M ; Li, H ; Yu, H ; Yan, Y ; Wang, C ; Teng, F ; Fan, A ; Xue, F  
Frontiers in oncology. 2022;12:941741

Cervical cancer remains the fourth most prevalent cancer in women worldwide. The infection of certain strains of human papillomavirus (HPV) are thought to have an important causative role in the development of cervical cancer. But since a vast majority of HPV infections clear naturally within a few months, this indicates other factors at play determine the progression of the disease and its cancerous developments. Recent findings indicate that there may be a close link between disruptions of the vaginal microbiome and HPV infection, cervical lesions, cervical cancer and other gynaecological diseases. However, the evidence thus far is quite varied. Hence this systematic review sought to gather the current evidence and integrate it to create up-to-date knowledge. Included were the 22 studies relating to vaginal microbiota, and women with HPV-associated cervical diseases. The studies were conducted in various countries around the world and contained a mixture of case-controlled, cross-sectional and longitudinal studies. The authors acknowledge the challenges of summarising the findings due to differences in how the studies have been conducted. The results of the review showed that vaginal disturbances in HPV infections and related cervical diseases, seem to manifest in decreases in Lactobacilli, and increases in aerobic and anaerobic bacteria. Lactobacillus iners seemed to have either protective or pathogenic effects. They also noted that there are geographical and ethnic differences and patterns, which made the consolidation of results more challenging. For future research, the authors deemed the role of the Lactobacillus family of particular interest.

## PROBIOTIC TREATMENT WITH SPECIFIC LACTOBACILLI DOES NOT IMPROVE AN UNFAVORABLE VAGINAL MICROBIOTA PRIOR TO FERTILITY TREATMENT-A RANDOMIZED, DOUBLE-BLINDED, PLACEBO-CONTROLLED TRIAL

Jepsen, IE ; Saxtorph, MH ; Englund, ALM et al.  
Frontiers in endocrinology. 2022;13:1057022

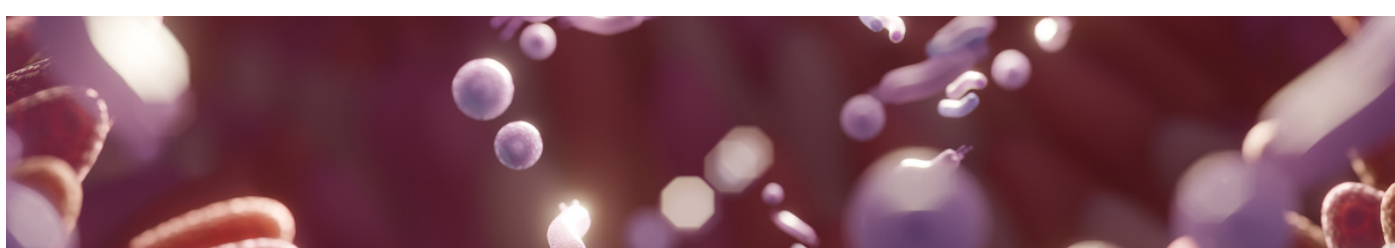
Efforts to improve pregnancy rates remain largely focused on enhancing the quality of the transferred embryo. However, there is increasing awareness of the potential role of the intra-uterine environment as a determinant for success. The aim of this study was to determine if lactobacilli-loaded vaginal capsules are superior to placebo in improving a vaginal microbiota reported as unfavourable to implantation in women scheduled for fertility treatment. This study is a single-centre, two-arm, double-blinded, randomised controlled study. The study enrolled women aged 18–40 years who were referred to the Fertility Clinic and whose vaginal microbiota prior to fertility treatment had been diagnosed as an unfavourable. Participants (n=77) were randomised in a 1:1 ratio to either lactobacilli-loaded vaginal capsules or placebo. Results did not show any significant effect of treatment with lactobacilli-loaded vaginal capsules on the unfavourable vaginal microbiota profile among women referred to fertility treatment. However, the study showed the highly dynamic nature of the vaginal microbiota, with a spontaneous improvement rate of 34.2% (of the patients) one to three months after the baseline sample. Authors conclude that probiotics use for the improvement of vaginal microbiota should be tempered with some caution. More studies of both the vaginal and endometrial microbiota are required to confirm the efficacy of specific vaginal probiotics before they can be considered as a therapeutic solution.



## INFLUENCE OF TIMING OF MATERNAL ANTIBIOTIC ADMINISTRATION DURING CAESAREAN SECTION ON INFANT MICROBIAL COLONISATION: A RANDOMISED CONTROLLED TRIAL

Dierikx, T ; Berkhout, D ; Eck, A et al.  
Gut. 2022;71(9):1803-1811

Early-life microbiome acquisition and development can be compromised by external perturbations such as delivery via caesarean section (CS), formula feeding and antibiotics. Currently, based on revised international guidelines, all infants born by CS are exposed to broad-spectrum antibiotics via the umbilical cord. Even though there was not an increase in the incidence of neonatal sepsis, the effects on the gut microbiota colonisation and long-term health consequences remain largely unknown. The hypothesis for this study was that exposure to antibiotics in children delivered by CS, related to the revised international guidelines, influences the microbial colonisation process and may impact health outcome. This study is a randomised controlled trial on the microbiome and health state of infants up to 3 years of age. The study enrolled women delivering via CS who received antibiotics prior to skin incision (n=20) or after umbilical cord clamping (n=20) and women who had a vaginal delivery (n=23). Results show that CS delivery in general leads to a profound impact on the initial microbial colonisation. Furthermore, maternal antibiotic administration prior to CS does not lead to a 'second hit' on the already compromised microbiome in CS born infants. Authors conclude that early-life microbiome development is strongly affected by mode of delivery.



## THE VAGINAL MICROBIOME AND THE RISK OF PRETERM BIRTH: A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS

Gudnadottir, U ; Debelius, JW ; Du, J ; Hugerth, LW ; Danielsson, H ; Schuppe-Koistinen, I ; Fransson, E ; Brusselaers, N  
Scientific reports. 2022;12(1):7926

Preterm birth is a major cause of neonatal mortality and morbidity. Many factors can trigger premature labour onset, including preterm premature rupture of membranes, infections and microbial invasion of the amniotic cavity. The vaginal microbiome is thought to protect from such infections. The aim of this study was to assess the association between the vaginal microbiome and the risk of preterm birth. This study is a systematic review and meta-analysis of 17 cohort studies. The number of pregnancies per study ranged between 38 and 539, with 8 and 107 preterm births.

Results show that women with a "low-lactobacilli" vaginal microbiome composition were at higher risk of preterm birth (spontaneous and overall) compared to women with L. crispatus (microbiome) dominant microbiome compositions. Authors conclude that the diversity of the vaginal microbiome seems to play a part in the risk of preterm birth.

