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Abstract Book

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OTS2/2 - Vaginal lactobacilli exert prebiotic effects towards gut bifidobacteria

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Abstract Content

Background: Colonization of infants' gut by *Bifidobacterium* spp. is crucial for the prevention of gastrointestinal diseases and the correct maturation of immune system. Infants born by C-section generally display low bifidobacteria amount and high risk of developing gastrointestinal disorders, suggesting that vaginal partum and bifidobacteria-enriched gut microbiota in newborns are interconnected. Healthy vaginal microbiota is generally dominated by *Lactobacillus* spp. that, in virtue of their well-known physiological benefits to vaginal ecosystem, are widely used as probiotics. Recently, *Lactobacillus* postbiotics have also gained interest.

Objectives: Lactobacillus strains of vaginal origin were investigated for their potential to promote the growth of Bifidobacterium spp. widely represented in the gut tract, in the perspective of unravelling possible contribution of lactobacilli to gut microbiota development and of designing novel strategies to improve infants' health.

Methods: Heat-inactivated cells and culture supernatants recovered from vaginal L*actobacillus crispatus*, *Lactobacillus gasseri*, *Limosilactobacillus vaginalis*, and *Lactiplantibacillus plantarum* strains were evaluated for bifidogenic activity. Such activity was measured towards planktonic cultures and biofilms of *Bifidobacterium* spp.

Results: Vaginal lactobacilli significantly stimulate *Bifidobacterium* spp. grown in free-floating and biofilm forms; such effect is dependent on *Lactobacillus* species and growth phase. Importantly, no stimulating effect on an intestinal strain of *Escherichia coli* was observed.

Besides already known probiotic effects, we demonstrated that vaginal lactobacilli inactivated cells and supernatants can exert a strong prebiotic activity on bifidobacteria, thus suggesting a novel approach based on *Lactobacillus* postbiotics to trigger a favorable bifidogenic shift in the infant gut.