



EFFECT OF MARE'S MILK PREBIOTIC SUPPLEMENTATION ON THE GUT MICROBIOME AND THE IMMUNE SYSTEM DURING AND AFTER ANTIBIOTIC THERAPY

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Antibiotic treatment can severely affect the gut microbiome with short-term and long-term consequences. Probiotic and prebiotic supplements are widely prescribed to modulate the composition and function of the human gut microbiome. The current study aims to determine the impacts of mare's milk prebiotic on the diversity of gut bacterial communities and the local immune system when administered during and after a course of antibiotic therapy. Six children aged 4 to 5 years diagnosed with bilateral bronchopneumonia were prescribed cephalosporin (Cefuroxime) antibiotics. During the 60 days of the study, 3 children consumed mare's milk prebiotics whereas the other 3 did not. Fecal samples were collected daily during antibiotic therapy and every 5 days after antibiotic therapy. Total DNA was isolated and taxonomic composition of the gut microbiome was analyzed by sequencing of the 16S rRNA gene (V1-V3 region). To evaluate the local immune status the MILLIPLEX MAP platform was used. Counts of 11 genera were reduced, which did not recover until the last day of the study. The abundance of *Bacteroides* were not significantly altered in both groups. *Christensenella*, *Rothia*, *Abitrophia*, *Acinetobacter*, *Anaerotruncus*, *Holdemania* and *Turicibacter* numbers are significantly increased at day 5 and remained at the same level during the study period. Cephalosporin administration also reduced pro-inflammatory and anti-inflammatory cyto/ chemokines (MIP1 α , TNF α , GM-CSF, G-CSF, sCD40L, FGF2, TGF α , IL1 α , IP10).