Reduced Akkermansia muciniphila and Faecalibacterium prausnitzii levels in the gut microbiota of children with allergic asthma

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Background: The amounts of Akkermansia muciniphila and Faecalibacterium prausnitzii in gut microbiota is reduced in patients with allergic diseases relative to healthy controls. We aimed to quantify levels of A. muciniphila and F. prausnitzii amounts using real-time quantitative PCR (qPCR) in the gut microbiota of children with allergic asthma and healthy controls.

Materials/methods: In total, 92 children between the ages of three and eight who were diagnosed with asthma and 88 healthy children were included in the study and bacterial DNAs was isolated from the stool samples using the stool DNA isolation Kit. qPCR assays were studied with the microbial DNA qPCR Kit for A. muciniphila and microbial DNA qPCR Kit for F. prausnitzii.

Results: Both bacterial species showed a reduction in the patient group compared to healthy controls. A. muciniphila and F. prausnitzii were found to be 5.45 ± 0.004, 6.74 ± 0.01 and 5.71 ± 0.002, 7.28 ± 0.009 in the stool samples of the asthma and healthy control groups respectively.

Conclusions: F. prausnitzii and A. muciniphila may have induced anti-inflammatory cytokine IL-10 and prevent the secretion of pro-inflammatory cytokines like IL-12. These findings may suggest that A. muciniphila and F. prausnitzii may suppress inflammation through its secreted metabolites.