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Immunological Consequences of Intestinal Fungal Dysbiosis.

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Abstract

Compared to bacteria, the role of fungi within the intestinal microbiota is poorly understood. In this study we investigated whether the presence of a "healthy" fungal community in the gut is important for modulating immune function. Prolonged oral treatment of mice with antifungal drugs resulted in increased disease severity in acute and chronic models of colitis, and also exacerbated the development of allergic airway disease. Microbiota profiling revealed restructuring of fungal and bacterial communities. Specifically, representation of Candida spp. was reduced, while Aspergillus, Wallemia, and Epicoccum spp. were increased. Oral supplementation with a mixture of three fungi found to expand during antifungal treatment (Aspergillus amstelodami, Epicoccum nigrum, and Wallemia sebi) was sufficient to recapitulate the exacerbating effects of antifungal drugs on allergic airway disease. Taken together, these results indicate that disruption of commensal fungal populations can influence local and peripheral immune responses and enhance relevant disease states.

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