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The influence of high fiber diet and probiotic supplementation in a murine model of colitis

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Probiotics are therapeutic agents administered to patients with IBD. In addition, it has recently been hypothesized that a high fiber diet may synergize with probiotics to exert an elevated cytoprotective effect on host tissue during colitis. Thus, we investigated the extent to which both orally administered probiotics and a high fiber diet protected intestinal tissue in a murine model of colitis. We administered the well-studied probiotic, *Lactobacillus rhamnosus* GG (LGG) to 8 week-old mice for two weeks before a 7-day challenge with 3% Dextran Sodium Sulfate (DSS). Protection was assessed in terms of disease activity index and histology. Mice given LGG or a high fiber diet conferred modest protection from DSS-induced colitis compared to controls. However, the cytoprotective effect was significantly strengthened in mice fed a high fiber diet in conjunction with LGG. Flow Cytometry analysis of immune cells in the colonic lamina propria revealed an immune-modulatory effect of LGG, which was elevated under a high fiber diet. Together, these data suggest that a high fiber diet plus a probiotic can lead to enhanced cytoprotection against DSS-induced colitis compared to either LGG feeding, or a high fiber diet alone.

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