Oral treatment with antigens from *Parabacteroides distasonis* protects mice from experimental colitis by oral tolerance induction

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Intestinal inflammation in Inflammatory Bowel Disease (IBD) results from aberrant mucosal immune responses to nonpathogenic gut microbiota. Here, we show that oral pre-treatment of BALB/c mice with antigens from particular commensal microbe, *Parabacteroides distasonis*, significantly reduces the severity of intestinal inflammation in dextran sulphate sodium (DSS)-induced model of colitis. This treatment significantly increased the number of regulatory T cells in mesenteric lymph nodes of treated mice and prevented DSS-induced increases in several pro-inflammatory cytokines in the gut mucosa. This protective effect was significantly reduced when the antigens were administered together with the strong mucosal adjuvant, cholera toxin, and could not be achieved by parenteral administration of this antigen. Moreover, the protective effect was not observed in mice with severe combined immunodeficiency or in immunocompetent BALB/c mice, in which Tregs were depleted by anti-CD25 antibody. Our results suggest that components derived from the commensal bacterium, *P. distasonis*, protect from intestinal inflammation by mechanisms including induction of oral tolerance, and therefore may be useful in the development of new therapeutic strategies for chronic inflammatory disorders such as IBD.