Role of Whey Containing Probiotics Bacteria of Lactobacillus casei and Bifidobacterium Bifidum in Treatment and Prevention of Colitis on Animal Model

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Background & Objectives: Inflammatory bowel disease (IBD) is a severe inflammation in the gastrointestinal tract and consists of two forms: ulcerative colitis (UC) and Crohn's disease (CD). Probiotics have anti-inflammatory properties for curing gastrointestinal disorders like inflammatory bowel disease (IBD). Gram positive lactic acid bacteria such as Lactobacilli strains and Bifidobacteria strains are primary microorganisms that classified as probiotics. Previous studies showed that *Lactobacillus casei* and *Bifidobacterium bifidum* reduced the levels of inflammatory biomarkers and modulate immune responses on murine models of colitis, separately. The aim of this study was to investigate the synergistic anti-inflammatory effects of whey cultured *L. casei* and *B. bifidum* on IBD management.

Methods: In our study we cultured *L.caseiand, B.bifidum* in whey, separately and then combined these probiotics together and administered orally to male Wiastar rats for 10 days. Colitis was induced by rectal instillation of trinitrobenzene sulphonic acid (TNBS). Animals were divided into 5 groups included normal (non-colitis), negative control (without any treatment), positive control (dexamethasone, 1 mg/kg/day, orally), prevention (1×108 cfu L. casei and 1×108 cfu *B. bifidum*/day, 10 days before TNBS-induced colitis), treatment (1×108 cfu *L. casei* and 1×108 cfu *B. bifidum*/day, 10 days after TNBS-induced colitis). Biopsy specimens were obtained from distal colon and then inflammatory markers consisting of tumor necrosis factor-α (TNF-α), myeloperoxidase (MPO) and lipid peroxidation (LPO) were identified.

Results: In treatment group, macroscopic scores reduced significantly and levels of TNF-α, MPO and LPO decreased but prevention group did not show positive effect to ameliorate colonic lesions.

Conclusion: These data indicated that combination of *L. casei* and *B. bifidum* could alleviate colon damage and inflammatory markers in treatment colitis. Additional studies required to define the role of another probiotics combination to improve IBD.

Keywords: Whey; Lactobacillus casei; Bifidobacterium Bifidum; Colitis