

## Amelioration of Lipopolysaccharide Induced Murine Colitis by Cell Wall Contents of Probiotic Lactobacillus Casei: Targeting Immuno-Inflammation and Oxidative Stress

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**Abstract :** Currently, according to the authors best knowledge there are less effective therapeutic agents to limit intestinal mucosa damage associated with inflammatory bowel disease (IBD). Clinical studies have shown beneficial effects of several probiotics in patients of IBD. Probiotics are live organisms; confer a health benefit to the host by modulating immunoinflammation and oxidative stress. Although probiotics in murine and human improve disease severity, very little is known about the specific contribution of cell wall contents of probiotics in IBD. Herein, we investigated the ameliorative potential of cell wall contents of Lactobacillus casei (LC) in lipopolysaccharide (LPS)-induced murine colitis. Methods: Colitis was induced in LPS-sensitized rats by intracolonic instillation of LPS (50 µg/rat) for consecutive 14 days. Concurrently, cell wall contents isolated from 103, 106 and 109 CFU of LC was given subcutaneously to each rat for 21 days, considering sulfasalazine (100 mg/kg, p.o.) as standard. The severity of colitis was assessed by body weight loss, food intake, stool consistency, rectal bleeding, colon weight/length, spleen weight and histological analysis. Colonic inflammatory markers (myeloperoxidase (MPO) activity, C-reactive protein and proinflammatory cytokines) and oxidative stress markers (malondialdehyde, reduced glutathione and nitric oxide) were also assayed. Results: Cell wall contents of isolated from 106 and 109 CFU of LC significantly improved the severity of colitis by reducing body weight loss and diarrhea & bleeding incidence, improving food intake, colon weight/length, spleen weight and microscopic damage to the colonic mucosa. The treatment also reduced levels of inflammatory and oxidative stress markers and boosted antioxidant molecule. However, cell wall contents of isolated from 103 were ineffective. Conclusion: In conclusion, cell wall contents of LC attenuate LPS-induced colitis by modulating immuno-inflammation and oxidative stress.

**Keywords :** probiotics, Lactobacillus casei, immuno-inflammation, oxidative stress, lipopolysaccharide, colitis

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