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Anti-inflammatory effect of baclofen through GABA receptors on acetic acid induced colitis in rat

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Inflammatory Bowel Disease (IBD) is a chronic inflammatory disorder of the intestinal tract whose etiology has not yet been fully elucidated and its treatment options have low efficacy and significant side effects. There is a pressing need for research to develop new effective drugs with lower adverse effects and more efficacy for treating IBD. The aim of the present study was to evaluate the anti-inflammatory effects of baclofen, a GABAB receptor agonist, on acetic acidinduced ulcerative colitis in rats and the probable involvement of GABA receptors. Twenty four hours before induction of colitis (intracolonic instillation of 2 mL of 3% acetic acid solution) to male Wistar rats, baclofen (5, 7.5, and 10 mg/kg; i.p.), Phaclofen (1mg/kg), Baclofen (10mg/kg) + phaclofen (GABAB receptor antagonist, 1mg/kg), and dexamethasone (1mg/kg) were administrated intraperitoneally (i.p) and continued daily for 3 days. Animals were thereafter sacrificed and the efficacy of baclofen on distal colon samples was investigated based on macroscopic assessment besides histological and biochemical findings [myeloperoxidase (MPO), tumor necrosis factor-alpha, interleukin-6, and interleukin-1 beta]. baclofen (7.5 and 10 mg/kg), and dexamethasone significantly decreased macroscopic and microscopic colonic lesions in rats compared with those in the colitis control group. These results were confirmed by reduced levels of MPO activity and colonic concentrations of interleukin-6, interleukin-1 beta, and tumor necrosis factor-alpha, in the inflamed colon tissue. The beneficial effects of baclofen were antagonized by concurrent administration of phaclofen. The results of this study indicate that the protective effects of baclofen on acetic acid-induced colitis could be mediated by GABAB receptors.

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Biography

Azadeh Motavallian (Pharm D, PhD) has completed her PhD at the age of 28 years from Isfahan University of medical sciences, Iran. She is an Assistant Professor of Guilan University of Medical Sciences in Iran and now working as a postdoc fellowship in Erasmus University Medical Center in the Netherlands. She has more than 20 publications that have been cited over 340 times, and her publication H-index is 10.

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