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Anti-fibrotic effect of gum arabic in recovery from inflammatory bowel disease

Amna AL Araimi, Amira AL Kharusi, Asma Bani Oraba, Ishraq AL Kindi and Fahad Zadjali
Sultan Qaboos University, Oman

Ulcerative colitis (UC) is characterized by chronic inflammation of the colonic mucosa, and in advanced stage it may also involve the submucosa layers. Fibrotic damages post-inflammatory phase results disturbed colonic functions associated with poor quality of life. In the present study, the effect of gum arabic (GA) was evaluated in a mouse model of acute experimental colitis induced by dextran sulphate sodium (DSS). Seventy mice were divided into three groups: Control, not treated with GA, a group given GA after colitis induction (post-GA) and a group given GA before induction of colitis (pre-GA). We showed that GA facilitated recovery of pathologic changes in the colon as evidenced by a significant less body weight reduction, decrease of disease activity index and decreased histopathological features of colitis. The GA effect was not explained by changes in systemic and local markers of inflammatory and anti-inflammatory and not by changes in microbiota metabolic markers. Similarly, there were no differences in ultra structures between GA and non-GA treated mice. We observed less colonic structures post-recovery in mice given GA evidenced by less reduction in colon length and also by histological analysis of collagen depositions. GA treated mice showed less expression of alpha-smooth muscle actin, a marker of active pro-fibroblasts and less expression of SMAD 1,2 and TGFBR1 protein levels. Our present findings suggest that GA has both preventive and protective effect on inflammatory damages in colon and have direct effect on fibrotic signaling pathways. Further mechanistic study is needed to study effect of GA on fibroblasts.

Biography

Amna AL Araimi is a PhD student in College of Medicine and Health Sciences, Department of Biochemistry at Sultan Qaboos University, Sultnate of Oman. Her Doctorate project focuses on pathophysiology of inflammatory bowel disease with focus on hormonal (growth hormone) and herbal therapy. Her work has generated mechanistic understanding of the actions of hormones and also herbal by-products in alleviation of tissue damages and especially fibrotic lesions. This is of greater interest in establishment of proper colonic function during recovery from inflammatory bowel disease.

amna.alaraimi3@gmail.com

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