

Resveratrol supplementation ameliorates TNBS colitis in rats

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Inflammatory bowel disease (IBD) has been a global healthcare problem with a sustained increasing incidence. It includes two major forms, Crohn's disease (CD) and ulcerative colitis (UC). Chronic inflammation underlies the aetiology of IBD and is closely associated with oxidative/nitrosative stress and a vast generation of reactive oxygen/nitrogen species. Several substances with antioxidant and anti-inflammatory properties are now intensively researched as possible adjunctive or independent treatment options in IBD. Among them, resveratrol (RES), a natural polyphenol is increasingly studied for its possible protective properties against IBD. In the present study, we aimed to investigate the anti-inflammatory effects of RES in three different doses. To this end, RES supplementation was carried out for 28 days in doses of 5, 10, and 20 mg/kg/day to male Wistar-Hannover rats per os. On the 25th day of the experiment, animals were challenged by intracolonic injection of 2,4,6-trinitrobenzene sulfonic acid (TNBS) to model IBD. Animals were sacrificed on the 29th day of the experiment. The histological features of the gut wall, especially the tunica mucosa layer showed clearly visible differences in the investigated groups. Based on our histological and planimetric analysis 10 mg/kg dose of RES is considered to be effective and significantly attenuated ulceration of the colon compared to the TNBS group. Furthermore, RES-induced protection at a concentration of 10mg/kg/day was mediated by the modulation of inflammatory parameters, such as myeloperoxidase (MPO), lipocalin-2, and high mobility group box-1 (HMGB1). RES supplementation also caused a decrease in inflammation by reducing the production of pro-inflammatory cytokines, such as tumor necrosis factor alpha (TNF- α), and enhancing the levels of interleukin-10 (IL-10) anti-inflammatory cytokine. Taken together, the protective effects of RES seem to be modulated by the attenuation of pro-inflammatory pathways.