
Abstract

Background—It is well established that glutamine supplemented elemental diets result in less severe intestinal damage in experimental colitis. However, few studies have examined the mode of action of glutamine in reducing intestinal damage.

Aims—To examine the effects of glutamine supplemented elemental diets on the potent inflammatory cytokines interleukin 8 (IL-8) and tumour necrosis factor α (TNF-α) in trinitrobenzene sulphonic acid (TNBS) induced colitis which presents with both acute and chronic features of ulcerative colitis.

Methods—Sprague-Dawley rats were randomized into three dietary groups and fed 20% casein (controls) or 20% casein supplemented with either 2% glutamine (2% Gln) or 4% glutamine (4% Gln). After two weeks they received intracolonic TNBS to induce colitis.

Results—Both Gln groups of rats gained more weight than the control group (p<0.05) which had progressive weight loss. Colon weight, macroscopic, and microscopic damage scores for the Gln groups were lower than in the control group (p<0.05). IL-8 and TNF-α concentrations in inflamed colonic tissues were lower in the Gln groups than in the control group (p<0.05), and correlated well with disease severity. Bacterial translocation was lower both in incidence (p<0.05) and in the number of colony forming units (p<0.05) for the Gln groups, than in the control group. With respect to all indices studied, the 4% Gln group performed better than did the 2% Gln group.

Conclusion—Prophylactic glutamine supplementation modulates the inflammatory activities of IL-8 and TNF-α in TNBS induced colitis.