

On the benefit of galls of *Quercus brantii* Lindl. in murine colitis: the role of free gallic acid.

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Abstract

INTRODUCTION:

In this study we investigated the effect of gall of *Quercus brantii* Lindl., a traditional Iranian medicine, in a murine model of experimental colitis induced in male rats by rectal administration of 2,4,6-trinitrobenzene sulfonic acid (TNBS).

MATERIAL AND METHODS:

Quantification of the main active components was done for estimation of total phenolic content and free gallic acid. Gall of *Quercus brantii* Lindl. in two forms (gall powder and gall hydro alcoholic extract) was gavaged for 10 days (500 mg/kg). Ten days after induction of colitis, colonic status was examined by macroscopic, microscopic and biochemical analyses. Colonic tumor necrosis factor- α (TNF- α) and interleukin-1 β (IL-1 β) were analyzed as biomarkers of inflammatory condition. To determine the role of oxidative stress (OS) in colitis, the levels of cellular lipid peroxidation (LPO), total antioxidant power (TAP) and myeloperoxidase (MPO) were measured in colon tissues.

RESULTS:

TNBS-induced colitis exhibited a significant increase in colon MPO activity and concentrations of cellular LPO, TNF- α and IL-1 β , while TAP was significantly reduced. Microscopic evaluations of the colonic damage in the colitis group revealed multifocal degenerative changes in the epithelial lining and areas of necrosis, extensive mucosal and sub-mucosal damage with congested blood vessels, edema and hemorrhages along with extensive infiltration of inflammatory cells. Parameters including macroscopic and microscopic scores, TNF- α , IL-1 β , LPO, TAP and MPO improved by both gall extract and gall powder of *Quercus brantii* Lindl. and reached close to normal levels. The level of total phenols (GAE/100 g of sample) and free gallic acid were estimated to be 88.43 ± 7.23 (mean \pm SD) and 3.74% of dry weight, respectively.

CONCLUSIONS:

The present study indicates that the gall of *Quercus brantii* Lindl. is able to exert antioxidative and anti-inflammatory effects on the biochemical and pathological parameters of colitis.

KEYWORDS:

Quercus brantii Lindl.; animal; colitis; oxidative stress