

activity (MPO), and tumor necrosis factor (TNF-alpha) ⁽⁸⁾.

Zinc has both antioxidant and anti-inflammatory actions. Zinc consideration as an antioxidant stems from its presence in Cu/Zn-Superoxide dismutase, an enzyme with a major role as scavenger of free radicals in the cytoplasm of many types of cells and in the extracellular space.

Hence according we try to explore the possible beneficial prophylactic and therapeutic effect of oral zinc sulfate for induced colitis in rabbits.

Materials and Methods

Colitis was induced in male rabbits by rectal administration of 5% acetic acid-30% ethanol (model 1) ⁽⁹⁾, or 2% acetic acid (model 2) ⁽¹⁰⁾. Animals in different groups were orally administered 10 ml of distilled water (control), prednisolone (2 mg/kg/day dissolved in 10 ml distilled water), or zinc sulfate (50 mg/kg/ day dissolved in 10 ml distilled water). Each agent (including distilled water) was administered orally two days prior to induction of colitis, the day of induction, and a dose 22 hours post-induction (i.e., 2 hours prior to killing of the animal). Twenty four hours after induction, the animals were sacrificed and the abdomen was opened longitudinally, and a segment of colon 8 cm ⁽¹¹⁾, proximal to anus was removed for assessment of colonic inflammation.

The effects were observed as changes in body weight, colon segment weight and gross histological score (Table 1) ⁽¹²⁾.

Colonic samples (0.5 cm of length) were taken from the 8 cm segment, fixed in 10% formaldehyde and the routine 5 micrometer sections were prepared. Tissues were routinely

stained with haematoxylin and eosin, coded, and evaluated blindly by light microscopy (with 40x high power objective lens) ⁽¹³⁾. Each slide was scored according to Christian, et al., ⁽¹⁴⁾ to assess the extent of colonic inflammation.

The score ranges from 0 to 40 (total score), which represents the sum of the products of each criterion by the score of the percentage involvement. All evaluations were performed by observers unaware of the treatment groups.

Scores ranged from 0 to 40, four criteria were depended: Inflammation severity scored from 0-3 as None, Mild, Moderate, Severe respectively, Inflammation extent from 0-3 as None, Mucosa, Submucosa, Transmural, respectively, Crypt damage from 0-4 as None, Basal 1/3 damage, Basal 2/3 damage, Crypt lost; surface epithelium present, Crypt and surface epithelium lost respectively; Percent involvement from 0-4 as 0%1-25%, 26-50%, 51-75%, 76-100%, respectively. The score (total score) represents the sum of the products of each criterion by the score of the percentage involvement ⁽¹⁵⁾.

Plasma zinc and copper concentrations were measured in control and zinc sulfate groups in both models before the first dose of treatment and just before killing with the aid of atomic absorption spectrophotometry.

Results are expressed in tables as means \pm standard error of mean (SEM), or drawn as bar charts. Paired student's T test was applied for data from the same group, while unpaired student's T test was used for data of different groups. When P value was ≤ 0.01 , it was considered as highly significant, while $0.01 < p$