

## Gastroprotective Effect of Copper Complex On Indomethacin-Induced Gastric Ulcer In Rats. Histological and Immunohistochemical Study

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**Abstract :** Background: Indomethacin is a non-steroidal anti inflammatory drug. Indomethacin induces an injury to gastrointestinal mucosa in experimental animals and humans and their use is associated with a significant risk of hemorrhage, erosions and perforation of both gastric and intestinal ulcers. The anti-inflammatory action of copper complexes is an important activity of their anti-ulcer effect achieved by their intermediary role as a transport form of copper that allow activation of the several copper-dependent enzymes. Therefore, several copper complexes were synthesized and investigated as promising alternative anti-ulcer therapy. Aim of the work: The purpose of this study was to evaluate a copper chelating complex consisting of egg albumin and copper as one of the copper peptides that can be used as anti-inflammatory agent and effective in ameliorates the hazards of the indomethacin on the histological structure of the fundus of the stomach that could be added to raise the efficacy of the currently used simple and cheap gastric anti-inflammatory drug mucogel. Material & methods: This study was carried out on 40 adult male albino rats, divided equally into 4 groups; Group I (control group) received distilled water, Group II (indomethacin treated group) received (25 mg/kg body weight, oral intubation) once, Group III (mucogel treated group) 2 mL/rat once daily, oral incubation, Group IV (copper complex group) 1 mL /rat of 30 gm of copper albumin complex was mixed uniformly with mucogel to 100 mL. Treatment has been started six hour after Induction of Ulcers and continued till the 3rd day. The animals sacrificed and was processed for light, transmission electron microscopy (TEM) and immunostaining for inducible nitric oxide synthase (iNOS). Results: Fundic mucosa of group II, showed exfoliation of epithelial cells lining the gland, discontinuity of surface epithelial cells (ulcer formation), vacuolation and detachment of cells, eosinophilic infiltration and congestion of blood vessels in the lamina propria and submucosa. There was thickening and disarrangement of mucosa, weak positive reaction for PAS and marked increase in the collagen fibers lamina propria and the submucosa of the fundus. TEM revealed degeneration of cheif and parietal cells. Marked increase positive reactive of iNOS in all cells of the fundic gland. Group III showed reconstruction of gastric gland with cystic dilatation and vacuolation, moderate decrease of collagen fibers, reduced the intensity of iNOS while in Group IV healthy mucosa with normal surface lining epithelium and fundic glands, strong positive reaction for PAS, marked decrease of collagen fibers and positive reaction for iNOS. TEM revealed regeneration of cheif and parietal cells. Conclusion: Co treatment of copper-albumin complex seems to be useful for gastric ulcer treatment and ameliorates most of hazards of indomethacin.

**Keywords :** copper complex, gastric ulcer, indomethacin, rat

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