

Gastroprotective potential of melatonin versus melatonin loaded niosomes on gastric ulcer healing in rats

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Objectives:

This study was conducted to investigate the therapeutic effects of melatonin and melatonin loaded-niosomes on ethanol induced gastric lesions.

Materials and methods:

Gastric ulcers were induced by 1ml 70% ethanol orally. The effect of oral administration of melatonin-loaded niosomes nanoparticles were investigated in healing of gastric ulcers in rats compared to the un-loaded melatonin.

Results :

Melatonin loaded niosomes showed early impressive gastroprotection as early as 7 days post-treatment while unloaded melatonin therapy exerted their effects after 14 days respectively. Biochemically, the cases of melatonin loaded-niosomes achieved the lowest mean values of lipid peroxidation and highest mean values of total antioxidants compared to other values recorded in case of unloaded melatonin therapy and these results are in accordance with that of the histopathological findings.

Fig.1: Gross and histopathological appearance of gastric ulcer induced group

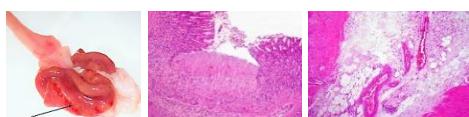


Fig2: Histopathological changes of gastric mucosa (3,7,14,21and 28 days) post melatonin and melatonin loaded niosomes treatment

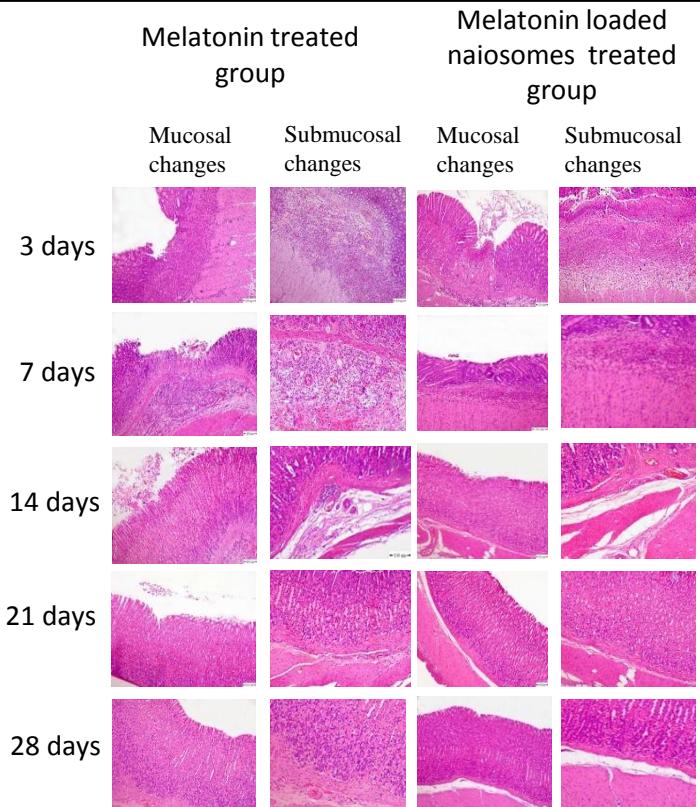
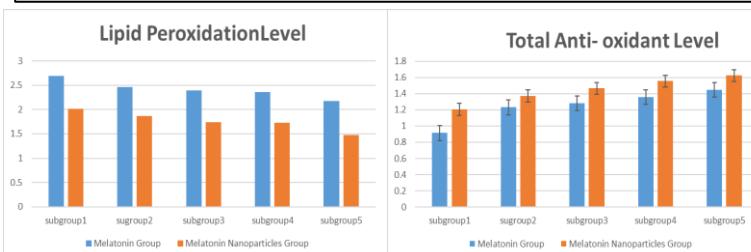


Fig.3 : Showing comparison between the mean values of gastric homogenate levels of lipid peroxidation (nmol/g tissue) and total antioxidants (mM/g tissue) of melatonin treated group compared to that of melatonin loaded niosomes treated group



Conclusion:

Our findings confirmed that niosomes nanoparticles incorporated with melatonin had a positive impact upon minimizing the severity and incidence of the gastric ulcers as well as enhancing their healing process.