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Histopathologic study on the effects of methionine in reduction of nephrotoxicity due to co-administration of gentamicin and indomethacin in rats

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Gentamicin is a wide spectrum aminoglycoside used against gram negative bacterial infections, but its clinical utility is restricted due to nephrotoxicity. Indomethacin is one of the NSAIDs with side effects on Kidney. Co-administration of indomethacin and gentamicin is necessary in some cases and may exaggerate gentamicin nephrotoxic effects. L-methionine can reduce gentamicin nephrotoxicity, so it may protect kidney from gentamicin and indomethacin co-administrative side effects. In this research, 42 male Sprague dawley rats were divided randomly into 6 equal groups. In the period of 14 days group 1-6 received normal saline (I.P), gentamicin (80 mg/kg BW, intramuscularly (I.M)), indomethacin (I.M), gentamicin (I.M) plus indomethacin (I.M), L-methionine (I.P), and gentamicin (I.M) plus indomethacin (I.M) and L-methionine (I.P) respectively once a day. In day 15, rats were euthanized and histopathologic slides of the kidneys were prepared. Histopathologic examination revealed renal congestion, severe acute tubular necrosis, interstitial nephritis, glomerular atrophy and tubular dilatation in cortex in group 2. Glomerular hypercellularity was seen in group 3. In group 4, renal congestion, severe acute tubular necrosis, interstitial nephritis, glomerular hypercellularity and hyaline casts were seen. In group 5, medullary congestion and in group 6, renal congestion, tubular epithelial regeneration and normal tubules were seen. There was no microscopic lesion in group 1. The results of the present study showed that co-administration of gentamicin and indomethacin caused severe nephrotoxicity and L-methionine could ameliorate this effect.

Keywords: Histopathology, methionin, reduction, nephrotoxicity, gentamicin, indomethacin

Evaluation of the antioxidant activity of the essential oil of *Zataria multiflora* in rat

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Zataria multiflora Boiss. is an endemic plant to Iran which has been used traditionally in food, especially in yoghurt as a flavouring agent, stimulant, condiment, carminative and for treatment of pre-mature labor pains and rupture. The extracts of aerial parts of *Z. multiflora* showed anti-inflammatory effects against acute and chronic inflammations in mice and rats. Our in vitro studies have confirmed the antioxidant activity of the essential oil. In the present work, we wish to report the In vivo antioxidant potential of the essential oil of the plant in rat. Antioxidant activity was measured by inhibition of 1,1 diphenyl-2-picrylhydrazyl (DPPH) radical and beta carotene bleaching test in serum of treated rats. Rats received the essential oil of *Z. multiflora* at doses of 100, 150 and 200 µl/kg daily by intragastric intubation for 10 consecutive days. The obtained results showed significant antioxidant activity in the DPPH test at all studied doses in comparing to control. This activity was in all doses comparable to that of BHT. No mortality was reported in the tested doses. The results here confirm in vivo antioxidant activity of the essential oil of *Z. multiflora*. Further studies in details are needed to find if this plant has any toxicity in comparing to BHT on vital organs like liver or kidney.

Keywords: Antioxidant, In vivo, *Zataria multiflora*, Essential Oil