

Protective Effect of L-Carnitine against Gentamicin-Induced Nephrotoxicity in Rats

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Abstract : This study aimed to determine the possible protective effects of L-carnitine against gentamicin-induced nephrotoxicity. Forty male albino rats were divided into 4 groups (10 rats each); Group 1: normal control, group 2: induced nephrotoxicity (gentamicin 50 mg/kg/day S.C; 8 days) , group 3: treated with L-carnitine (40 mg/kg/d SC for 12 days) and group 4: treated with L-carnitine 4 days before and for 8 days in concomitant with gentamicin. Gentamicin-induced nephrotoxicity (group 2): caused significant increase in serum urea, creatinine, urinary N-acetyl-B-D-glucosaminidase (NAG), gamma glutamyl transpeptidase (GGT), urinary total protein and kidney tissue malondialdehyde (MDA) with significant decrease in serum superoxide dismutase (SOD), serum catalase and creatinine clearance and marked tubular necrosis in the proximal convoluted tubules with interruption in the basement membrane around the necrotic tubule compared to the normal control group. L-carnitine 4 days before and for 8 days in concomitant with gentamicin (group 4) offered marked decrease in serum urea, serum creatinine, urinary NAG, urinary GGT, urinary proteins and kidney tissue MDA, with marked increase in serum SOD, serum catalase and creatinine clearance with marked improvement in the tubular damage compared to gentamicin-induced nephrotoxicity group. L-carnitine administered for 12 days produced no change in the above-mentioned parameters as compared to the normal control group. In conclusion: L-carnitine could reduce most of the biochemical parameters and also improve the histopathological features of the kidney associated with gentamicin-induced nephrotoxicity.

Keywords : gentamicin, nephrotoxicity, L-carnitine, kidney disease

Conference Title : ICPP 2014 : International Conference on Pharmacy and Pharmacology

Conference Location : Bangkok, Thailand

Conference Dates : December 24-25, 2014