

Acrylamide-Induced Acute Nephrotoxicity in Rats

Authors : Keivan Jamshidi, Afshin Zahedi

Abstract : Acrylamide (ACR) has been shown to cause neurotoxic effects in humans and neurotoxic, genotoxic, reproductive, and carcinogenic effects in laboratory animals. To investigate the nephrotoxic effect of Acrylamide (ACR), 50 adult male rats (Wistar, approximately 250 g) housed in polycarbonate boxes as 5 per each, and randomly assigned in 5 groups including 4 exposure groups as A, B, C, and D groups of rats (10 rats per exposure group., total) and were exposed to 0.5, 5, 50, 100 mg/kg ACR per day×11days i.p. respectively. The remaining 10 rats were housed in group (E) as control group. Control rats received daily i.p. injections of 0.9% saline (3ml/kg). On day 12, four rats, were randomly selected, perfused , dissected and proper samples were collected from their kidneys. Results of histopathological studies based on H&E technique did show no morphologic changes in kidneys of rats belong to groups A, B and E, while moderate to severe morphologic changes including glomerular hypercellularity, global pattern of proliferative glomerulonephritis, occupation of capsular space, tubular cell swelling and hyaline cast formation, were observed in different stained sections obtained from the kidneys of rats belong to group, C, and D. This finding, beside neurotoxic, reproductive and carcinogenic effects, seems to indicate for the first time another important aspect of toxic effect of ACR, i.e., acute nephrotoxicity.

Keywords : acrylamide, nephrotoxicity, glomerulonephritis, rats

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