

## Light and Electron Microscopy Study of Acrylamide-Induced Hypothalamic Neuropathy

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**Abstract :** To evaluate neurotoxic effects of ACR on hypothalamus of rat, amino-cupric silver staining technique of de Olmos and electron microscopic examination were conducted. For this purpose 60 adult male Wistar rats ( $\pm$  250 g) were selected. Randomly assigned groups of rats (10 rats per exposure group, as A, B, C, D, E) were exposed to 0.5, 5, 50, 100 and 500 mg/kg per day $\times$ 11days i.p. respectively. The remaining 10 rats were housed in group F as control group. Control rats received daily i.p. injections of 0.9% saline (3ml/kg). As indices of developing neurotoxicity, daily weight gain, gait scores and landing hindlimb foot splay (LHF) were determined. After 11 days, two rats for silver stain, and two rats for EM, were randomly selected, dissected and proper samples were collected from hypothalamus. Rats in groups D and E died within 1-2 hours due to sever toxemia. In histopathological studies no argyrophilic neurons or processes were observed in stained sections obtained from hypothalamus of rats belong to groups A, B and F, while moderate to severe argyrophilic changes were observed in different nuclei and regions of stained sections obtained from hypothalamus of rats belong to group C. In ultrastructural studies some variations in the myelin sheet of injured axons including decompactation, interlaminar space formation, disruption of the laminar sheet, accumulation of neurofilaments, vacillation and clumping inside the axolem, and finally complete disappearance of laminar sheet were observed.

**Keywords :** acrylamide (ACR), amino-cupric silver staining technique of de Olmos, argyrophilia, hypothalamic neuropathy

**Conference Title :** ICVBS 2014 : International Conference on Veterinary and Biomedical Sciences

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** June 19-20, 2014