

## Short-term adrenalectomy induces cell death, biochemical and morphological changes in the hippocampus of albino wistar rats

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### Abstract

Bilateral adrenalectomy (ADX) has been shown to damage the hippocampal neurons. However, the effects of short-term ADX is not studied. Therefore, we aimed to investigate the effects of short-term ADX on the levels of pro-inflammatory cytokines, response of microglia, astrocytes, neuronal cell death and oxidative stress markers (4 h, 24 h, 3 days, 1 week and 2 weeks) in the hippocampus. Our results showed a transient significant elevation of pro-inflammatory cytokines IL-1 $\beta$  and IL-6 from 4 h to 3 days in the ADX compared to sham. TNF- $\alpha$  levels were significantly elevated at 4 h only in ADX compared to sham. Time dependent increase in degenerated neurons in the dorsal blade of the dentate gyrus from 3 days to 2 weeks after ADX. Quantitative analysis showed significant increase in the number of microglia (3, 7 and 14 days) and astrocytes (7 and 14 days) of ADX compared to sham. A progression of microglia and astroglia activation all over the dentate gyrus and their appearance for the first time in CA3 of adrenalectomized rats hippocampi compared to sham was seen after 2 weeks. A significant decrease of GSH levels and SOD activity and increase in MDA levels were found after 2 weeks of ADX compared to sham. In order to investigate the effect of adrenalectomy on the behavior of the animals we used a passive avoidance test at 3, 7 and 14 days after adrenalectomy. Our results showed a significant reduction in the latency time in the adrenalectomized rats compared to the sham operated rats 3, 7 and 14days after adrenalectomy.

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### Speaker Publications:

1. Hippocampal Neuroinflammation, Neurodegeneration, Gliosis in Wistar rats Following Adrenal Gland Removal.

[3<sup>rd</sup> World Neuron Congress](#); Webinar- December 15, 2020.

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### Biography:

He has a bachelor degree in biochemistry from of El Haj-Lakhdar University, Batna, Algeria in 2006. He moved to university of Constantine-1 between 2006-2009 where he obtained his Master degree in in molecular and cellular toxicology. He got his PhD from the same university. He