

**BRAIN HISTOLOGICAL STUDY OF LEAD-INDUCED
SPRAGUE DAWLEY RAT SUPPLEMENTED WITH
VITAMIN E**

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ABSTRACT

BRAIN HISTOLOGICAL STUDY OF LEAD-INDUCED SPRAGUE DAWLEY RAT SUPPLEMENTED WITH VITAMIN E

In recent times, toxicity of metal has become a major concern to the global community. Lead (PB^{2+}) especially is reported to be the reason behind disorders such as encephalopathy also impairment in liver and kidney functions. The long term effect of lead toxicity is testified as the Alzheimer disease. Scientist has proposed the mechanism of lead toxicity is due to oxidative stress but studies are still ongoing to prove the theory right. In this study, the ameliorative effect of vitamin E is suggested to improve the toxicity effect of lead. Vitamin E is a type of anti-oxidant used to recover the condition of oxidative stress due to the exposure of rats to lead. Two groups of rat brains were used to study the histological changes after the treatment period. Controlled group (CTRL) was supplemented with distilled water while lead-affected group (PB2) was being given with 0.2% lead acetate orally through force feeding method and finally, vitamin E with an amount of 200mg/1kg body weight of rat together with 0.2% of lead acetate were supplemented to PB2T group. The duration for feeding was for 30 days. After the scarification of rats, the brain samples were extracted and studied. At the end of the project, the brain tissue was dissected at the hippocampus area by using paraffin-incorporated tissue slicing method and then the tissues was stained with H & E for microscopic analysis. The result of this study is lead toxicity as low as 0.2% caused acute histological changes to the neuronal cells in the brain tissue. The cells were vacuolated, the cytoplasm was swollen and the chromatin was intensified as the nucleus undergone fragmentation. The cells are said to be necrotic whereby pyknotic characteristics were detected. The area of which the cells experienced histological changes was also extended largely. When vitamin E was supplemented to 0.2% lead-induced rats in PB2T group, the neuronal cells are found to experience less histological changes and the cells appear to be morphologically identical with the control group. Though, some neuronal cell with atypical characteristics is still detected in PB2T group but the intensity is not as much as in PB2 group. In conclusion, low dose of lead toxicity can cause histological changes towards the brain tissue and vitamin E supplementation is suggested to be beneficial in reducing lead accumulation in the brain cells.