

EFFECT OF *FLAXSEED* ON ALUMINUM CHLORIDE-INDUCED NEUROTOXICITY ON THE STRIATUM IN A RAT MODEL.

ABSTRACT

Aluminum chloride is a well-known neurotoxic agent is still used in essential items of humans such as antiperspirants, but due to the daily use neuronal damage may occur. *Flaxseed* has been found to possess neuroprotective properties as well as prevent depressive symptoms. This study carried out aimed to observe the effect of *Flaxseed* on aluminum chloride induced neuronal damage. Thirty-five Wistar rats were acquired and randomly separated into five groups with seven animals in each group, each group was administered Aluminum Chloride (AlCl₃) or *Flaxseed* (FL) or both then studied to view the results following the experiment. Group A served as the control group, Group B was administered AlCl₃ (20mg/kg), Group C was administered AlCl₃ (20mg/kg) and FL (100mg/kg), Group D was administered AlCl₃ (20mg/kg) and FL (200mg/kg) and Group E was administered AlCl₃ (20mg/kg) and Donepezil (2mg/kg). Aluminum Chloride was administered for 14 days and the treatment was done for 7 days. Elevated Plus Maze was the apparatus used to perform the neurobehavioural study which tested for anxiety. Following sacrifice, the brain was harvested and Gamma-Aminobutyric Acid (GABA) Nitrogen Dioxide (NO₂) and Malondialdehyde (MDA) levels were measured. Hematoxylin and Eosin and Luxol Fast Blue were used to demonstrate the histological features of the striatum, Parvalbumin expression was Immunohistochemically demonstrated. The results gotten where analyzed with Graph Pad Prism 5 using One-way ANOVA and Student Newman-Keuls for multiple comparisons with a P value of <0.05. The Scale of the Histological Photomicrograph was set using Image J software. The results gotten from this experiment showed a slight increase in the body weight of the

animals in group B. GABA level was significantly lower in group E when compared to the rest of the group. NO showed no significant difference across all the groups as well as MDA.

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From the photomicrograph taken it can be observed that there were improvements of the groups treated with *Flaxseed* when compared to the negative control group.

This study concluded that *flaxseed* had a positive effect on aluminum chloride-induced neuronal damage histologically but failed to bring down the level of the neurotransmitters and the reactive oxygen species markers.

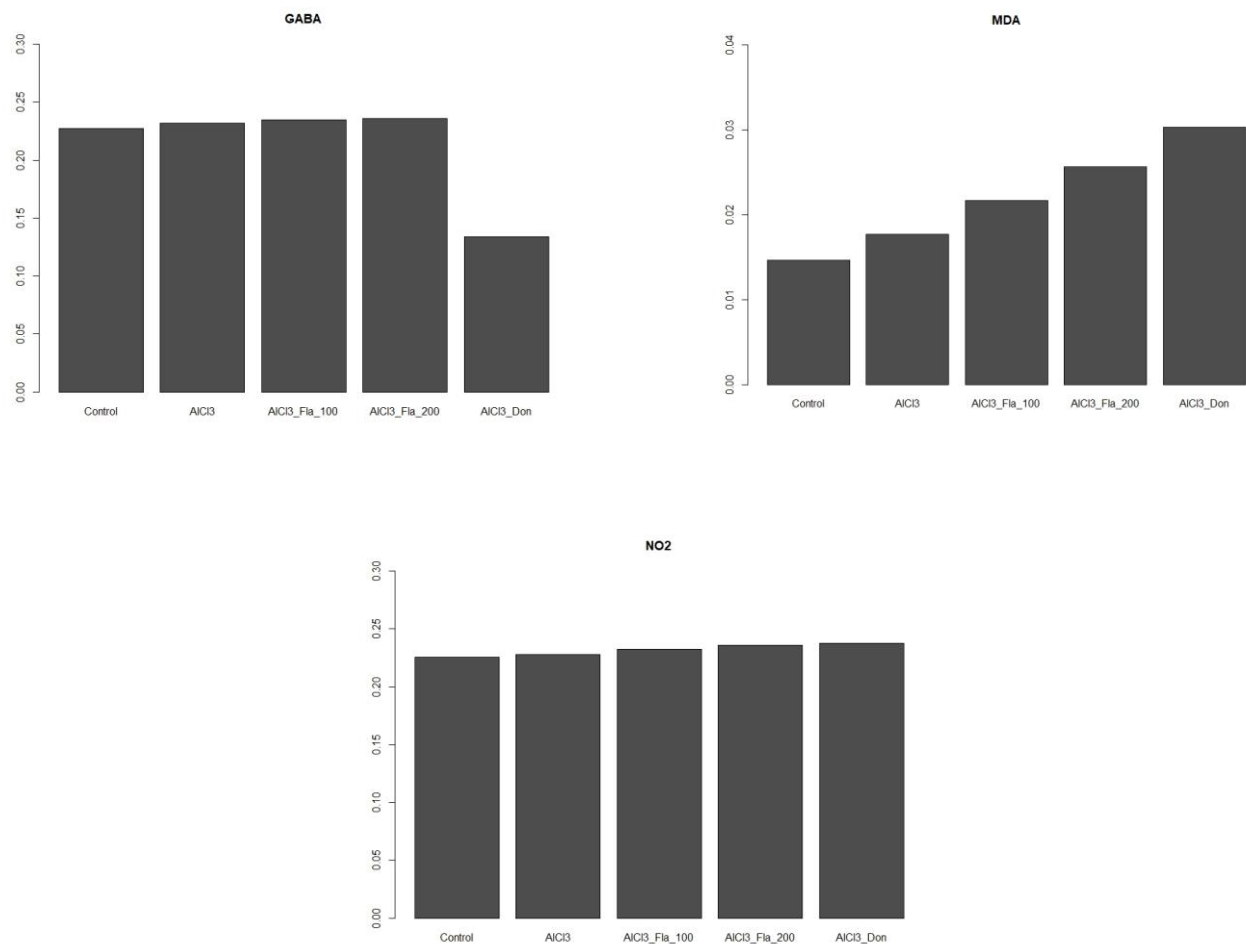


FIG 1: Bar Charts of Biochemical Assay levels of the Animals Groups in this experiments.