

## 3<sup>rd</sup> International Conference on **Alzheimer's Disease & Dementia**

August 31 - September 02, 2015 Toronto, Canada

### **Modeling stages of Alzheimer's disease induced by different doses of Aluminum in rats: Focus on progression of the disease in response to time**

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**Background:** Alzheimer's disease (AD) is a neurodegenerative disorder characterized by progressive degeneration of the hippocampal and cortical neurons that leads to impairment of memory and cognitive ability. It is the most common cause of dementia and its incidence increases with age.

**Objective:** The study aimed to establish a model for different stages of AD in rats using different doses of ALCL<sub>3</sub>.6H<sub>2</sub>O. It also aimed to determine the disease progression in the brain in response to time at all used dose levels of ALCL<sub>3</sub>.

**Methods:** For modeling stages of AD, different doses of ALCL<sub>3</sub>.6H<sub>2</sub>O (50, 70 and 100 mg/kg I.P for 6 weeks) were used. Histopathological examinations were achieved in different brain regions; moreover biochemical measurements as B- amyloid, ACHE and antioxidant parameters (SOD, TAC, and MDA) had been also estimated. In addition, the performance of rats was examined in the Morris water maze test and Conditioned avoidance test. The progression of AD was also determined for all used dose levels of ALCL<sub>3</sub> after different periods (4, 5 and 6 weeks), as well as after one week of stopping injection and detected by histopathological changes and degenerations in different brain regions.

**Results:** The present results showed that rats injected with ALCL<sub>3</sub>.6H<sub>2</sub>O at dose 70 mg/kg I.P for 6 weeks represent the most exact model of AD where the hippocampus neuronal degeneration and pyknosis were more pronounced. This model was sharply confirmed by biochemical and behavioral examinations. Mortality rates were taken in consideration. The progression of the disease at all dose levels was time dependent, however the mortality rate was sever at dose 100 mg/kg at all times while slowly degeneration was achieved at dose 50 mg/kg. In addition AD spread spontaneously even after one week stopping ALCL<sub>3</sub> injection.

**Conclusion:** In the present study 70 mg/kg of Aluminum for 6 weeks represents the ideal model for AD. The progression of the disease is time dependent and just starts spread spontaneously without more Aluminum exposure.

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