

Demmouche Abbassia*, Bekhadda H., Menadi N, Bouazza S.

Biotoxicology laboratory, Department of Biology, Faculty of Natural Sciences and life-Djillali Liabes University of Sidi Bel Abbas, Algeria

Introduction: Aluminum (Al) has the potential to be neurotoxic in human and animals, is present everywhere in the environment, many manufactured foods and medicines and is also added to drinking water for purification purposes and tooth paste cosmetic products They accumulate in living organisms and disrupt balances, and accumulate in the body biological systems, causing toxic effects (They may affect the nervous system, kidney, liver, respiratory or other functions). Nervous system is a vulnerable target for toxicants due to critical voltages which must be maintained in the cells and the all responses when voltages reach threshold levels. This study aimed to expose the impact of aluminum chloride (AlCl₃) on brain architecture.

Experimental Design: The study comprised 20 female Wistar rats divided into two groups of ten for this experiment. The Wistar rats were housed in a stainless steel cages maintained at standard environmental conditions (12h-12h light-dark cycle with light on at AM) with sufficient food, water and under good ventilation All the rats were acclimatized for 2 week before the test, and randomly divided into four equal groups: The wistar rats were divided into two groups.: Control group I: was given NaCl 0.9 . Group II: received 10mg/Kg body weight ALCL3 for five teen days (15D) . Aluminum chloride administered to female rats via injection intrapertoneale.

Result. The normal histological structure of Cerebral Cortex in rats brain with intact neurons and glial cell were seen in control animals.(**plate 1**). Group II treated showed slight sign of degeneration with slight cell distortion karyopyknosis of neuronal cells and vacuolation of the cerebral cortex **plate 02** and the necrosis in the brain parenchyma **plate 03**. The results showed a highly significant reduction in body weight ($p < 0.0001$), This is because aluminum has an anorectic effect contrariwise, there is no significant impact of aluminium exposure has been observed with respect to brain weight and relative brain weight respectively ($p < 0.912$), ($p < 0.42$). The histological study describes the alterations in the brain marked tissue necrosis and cytoplasmic vacuolations and karyopyknosis of neuronal cells of the brain.

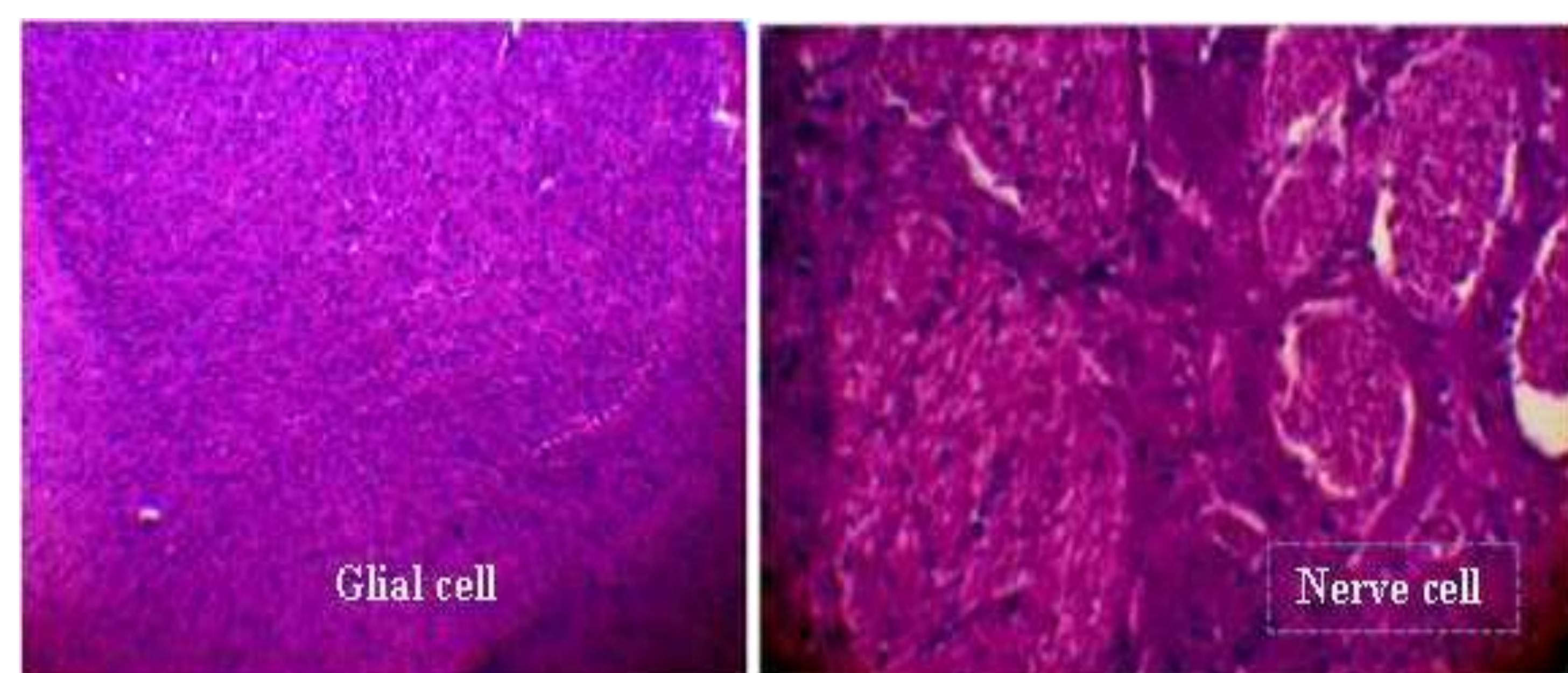


Plate 1: The histological analysis of Cerebral Cortex tissue in rats' brain stained with H&E (control group) Section A (Magnification X 10) / Section B . (Magnification X 40).

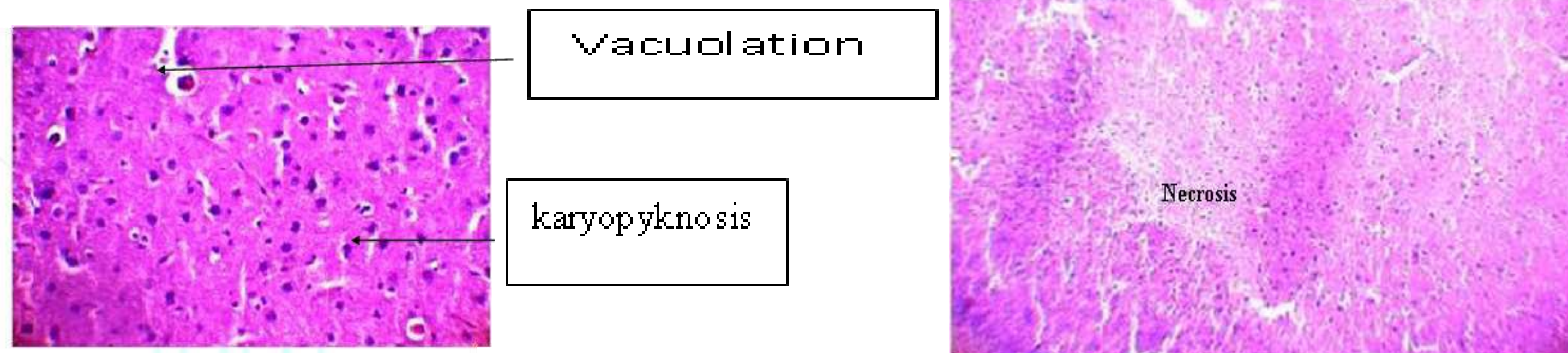


Plate2: The histological analysis indicated slight neuronal vacuolation of the Cerebral Cortex of Wistar rats **Plate 3:** The histological analysis indicated showing necrosis of the Cerebral Cortex in rats' brain of Al-treated rats. Group II stained with H&E. (Magnification X 10).

Conclusion : Aluminum is a toxic heavy metal and a ubiquitous environmental pollutant. It can alter the permeability of the blood-brain barrier and enter the brain, severely affecting the functioning of the nervous system.

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Pr ABBASSIA DEMMOUCHE. Professor in biology and laboratory head

Biotoxicology laboratory. Department of Biology, Faculty of Natural Sciences and life-Djillali Liabes University Sidi Bel Abbas. Algeria.

E-Mail: demmoucheabbassia@yahoo.fr

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