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**Study of the effect of metformin drug on the abundance of alpha -7 nicotinic acetylcholine receptors ( $\alpha 7$ -nAChRs) at induced mice diabetic disease tissues and its relation to the incident of Alzheimer disease**

Both Alzheimer's disease (AD) and diabetes mellitus disorder share the most prevalence devastating healthy problems in the old people. Diabetic is a known as a risk factor for the emergence of cognitive dysfunction and dementia complication. Biological and epidemiological evidences confirmed a link between the two diseases, but the precise mechanisms that involved in the developing of cognitive impairment in diabetic patients are not fully comprehended. The Alpha -7 nicotinic acetylcholine receptors ( $\alpha 7$ -nAChRs) are a type of transmembrane ligand, that are activated through in response to the neurotransmitters such acetylcholine (ACh) and other agonist like nicotine. It belongs to superfamily of receptors that are the fast ionotropic cationic ligand-gate ion channels in nervous, and muscle cell tissues. This receptor play a vital role in the supporting the cognitive function of animal , learning and memory potency by the neurotransmission adjusting , through the control secretion of a different neurotransmitters. Several previous studies had been demonstrated, that the decline in nicotinic receptors mostly the ( $\alpha 7$ -nAChR) subtype are linked with aging, and also reduced particularly in brain AD patients. The current study included two aims, the first was the investigation about the abundance of ( $\alpha 7$ -nAChR) at the brain tissue of mice that induced diabetic disease conditions. Second aim was the study the influence of orally metformin drug (which considered as the first line treatment of diabetic disease type 2) on the ( $\alpha 7$ -nAChRs) abundance in brain tissue of treated diabetic mice by metformin during a therapy duration was 45 days, by means of using the technique detection, the immunohistochemistry (IHC).

**Biography**

Perry Habib Saifullah is working in the department of Chemistry, College of science for women, University of Baghdad. The field of his research is based on the diagnosis, prognosis and treatment of diabetes mellitus patients. He supervised his master and doctorate in the field of biochemistry and medical biochemistry. He is also working as a director for career and development unit in his college to improve the curriculum in a way that provides students with their knowledge skills and soft skills.

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