



**University of zabol**

**Graduate school**

**Faculty of science**

**Department of Biology**

**The Thesis submitted for the Degree of M.Sc  
(in the field of Genetic)**

**Title:**

**Evaluation of *Hook* gene expression changes in  
transgenic A $\beta$  and tau *Drosophila* models**

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## **Abstract**

Alzheimer's disease is a neurodegeneration disorder with two main characteristics called beta amyloid plaques and neurofibrillary tangles composed of tau protein. Dysfunctional autophagy is also a feature of Alzheimer's disease. In Alzheimer's disease, amyloid beta and tau cause some sort disorder in autophagy . The *Hook* gene is one of the genes involved in the autophagy process. *Hook* gene expression proteins are involved in endosomal translocation, and decreased expression of this gene slows endosomal translocation and disrupts autophagy. In this study, we used *Drosophila melanogaster* as a model animal. And by creating transgenic strains expressing human amyloid beta and tau, we evaluated the changes in *Hook* gene expression in CNS tissues using Real Time PCR technique. The results showed that amyloid beta and tau each had different effects on *Hook* gene expression.the amyloid beta decreased and tau increased the expression of *Hook* , and this is due to differences in their mechanisms of action.

**Keyword:** Alzheimer's disease, A $\beta$ , Tau, autophagy, *Hook* gene, *Drosophila melanogaster*.