Effect of Osmotic Stress on the Expression of the Beta Amyloid 1-42 Gene of Alzheimer's Disease in Transgenic C. elegans Model

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Alzheimer's disease is demarcated as a progressive neurodegenerative disorder resulting from the irrational number of people affected worldwide (Ecuadorian Journal of Neurology, s.f.). To study the effect of osmotic stress on the expression of the Beta Amyloid 1-42 gene of Alzheimer's disease, transgenic Caenorhabditis elegans (C. elegans strain CL2120) was used as a model. Osmotic stress leads to efflux or influx of water from or into the cell: hyperosmotic stress causes shrinking, hypoosmotic stress causes swelling. To analyze the effect of osmotic stress in the expression of the Beta Amyloid 1-42 gene, a concentration of 250 millimolar NaCl was added to the experimental group. After this alteration, it was determined whether the expression of the Aß(1–42) gene of Alzheimer's disease increased or decreased using a fluorescence microscope. Twenty (20) images were taken and analyzed in the Image J program. Statistical analysis of the data using IBM SPSS v. 25 T- test and ANOVA show that there was not a statistically significant increase in the expression of the gene. In effect, it was found that by adding a higher concentration of NaCl the nematodes were exposed to osmotic stress. To conclude, the null hypothesis is accepted since although the model underwent changes due to stress, these changes did not amplify the expression of the Amyloid Beta 1-42 gene of Alzheimer's disease.

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