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P 092 - Evaluation of the Histone Deacetylase Activation in Injured Retina and Sclera

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Acetylation and deacetylation of histones, carried out by histone acetyltransferases and histone deacetylases(HDACs), respectively, affects cellular division, differentiation, death and survival. We investigated the role of protein acetylation of the retina and sclera after chronic intraocular pressure(IOP) elevation. We used a rat ocular hypertension glaucoma model induced by episcleral vein cauterization and investigated the changes of acetylation and its structure in the retina and sclera. Western blot analysis and fluorescence immuno-staining were used for determination of HDACs and histone H4 acetylation at various time points after moderate IOP elevation. IOP remained elevated in the cauterized eyes for the 8-week experiment, whereas it was not elevated in the contralateral control eyes. The average number of RGCs decreased significantly, and TUNEL-positive cells were detected in the ganglion cell layer (GCL). HDAC2 and HDAC3, increased throughout the retinal layer after IOP elevation. HDAC2, HDAC3, and histone acetyl H4 after IOP elevation was expressed in GCL, inner nuclear layer. HDAC 2 and HDAC3 was elevated in chronic ocular hypertensive retina and causally related to their death, suggesting HDAC inhibition as a novel approach for neuroprotection in retinal degeneration. The role of this phenomenon needs further investigation.

P 093 - The Drosophila Luminescence Reporter Gene Use when Designing a Biosensor

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The work is devoted to a biosensor development based on the Drosophila melanogaster reporter gene their properties being similar to a microbiological optosensor, but can exceed them by sensitivity and specificity. In the experiments there were used the Drosophila melanogaster M. lines with a genetic design of UAS-GFP-Gadd45-Gal4 where UAS acts as a promotor, and Gadd-45 is a driver. The construction contains a gene of a green fluorescent protein (GFP) which gives an opportunity to analyze its expression in various tissues and bodies of the drosophila larva. The GADD45 driver in this genetic construction is a gene of protein which is produced in response to any stress and starts a Gal-4 gene expression. In it's turn a yeast protein Gal4 protein initiates a synthesis of the fluorescent GFP protein.

The purpose of a biosensor is sensitivity to some stressful factors which can visually be shown and measured in many cases. In our case such factor is α-radiation, and its source is radon. In our experiments we used larvae of II and III age, were applied Pu238, Pu239 as sources α-rad.. As a result, the luminescence of a green fluorescent protein in imaginal disks, intestines and ganglion have been found.

It demonstrated that the GFP reporter gene is induced by α-radiation. In spite of the fact that addiction between the degree of a luminescence and a dose of radiation hasn't been established the reporter, thresholds induction in tissues have been found revealed. Therefore the reaction to a stress of salivary glands is noticeable can be observed beginning with a dose of 200rad. whereas in imaginal disks it starts with 300rad. Thus, various reporter induction thresholds in a biosensor tissues make it possible to estimate radiation dose.

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