

## MEETING ABSTRACTS

# ***IN VITRO* MODEL EXPRESSING ACETYLCHOLINESTERASE FOR EVALUATION OF NEUROTOXICITY AND NEUROPROTECTION**

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Neurotoxicity is commonly associated not only with neurodegenerative damage but also with organophosphate intoxication. Neuronal death may be associated with acute and life-threatening symptoms and subsequent long-term secondary disorders. This study focuses on the development and validation of a cellular model of mature human neurons. A model was obtained by differentiating the neuroblastoma cell line SH-SY5Y. *In vitro* cell model is suitable for studying neurotoxicity and its potential countermeasures. The protocol involved stimulation of the cell line with retinoic acid and brain-derived neurotrophic factor for 9-12 days. Observation of morphological signs of neurons (characteristic synaptic connections), using lighting microscopy and a detection of specific neuronal markers (tau protein, microtubule-associated protein (MAP), synaptophysin (SYN), post-synaptic density protein (PSD-95)) using fluorescence microscopy was used for validating this model. Another experiment was focused on the quantification of acetylcholinesterase in differentiated and undifferentiated cells. As a result, it has been shown that the level of enzyme in the differentiated cells is significantly higher than in the original undifferentiated cells. Another planned use of the model is *in vitro* testing of the neurotoxic effects of organophosphates and screening of potential prophylactics or drugs for the treatment of neurodegenerative injuries.

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