ABSTRAKT V ANGLICKÉM JAZYCE

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Title of diploma thesis: Assessment of drug cytotoxicity using various cell viability tests

Nowadays, cell viability assays are an important part of preclinical studies. There is a wide spectrum of different methods that can be used for such purposes. This thesis aims to compare some of the fundamental methods, their accuracy and selectivity, as well as the advantages and drawbacks of their application.

Six different drugs were measured using five different cell viability assays – colorimetric (MTT, crystal violet), fluorimetric (propidium iodide, calcein-AM) and luminometric (ATP) on the CHO-K1 cell line.

The outcomes of all methods are IC_{50} values of used drugs assessing their cytotoxicity, including graphic representations of the measurements and standard deviations. Finally, all the methods are compared based on experience gained during the experiment as well as information gained during the theoretical research.

Among the most suitable methods belong the MTT and ATP assay. Due to some difficulties during the measurement (e.g. unsuitable for use in adherent cell lines) calcein-AM assay appeared to be less convenient. Crystal violet and propidium iodide assays came out as least suitable methods, as in crystal violet several washing steps could cause large deviations, and propidium iodide signal is measurable only in severely damaged cells.

In conclusion, given the differences in obtained results with different methods it is recommended to use more than one cell viability assay to study cytotoxic effects of substances and drugs.