ABSTRACT

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Title of diploma thesis: *In vitro* screening of potential antimycobacterial compounds active against fast growing strains of *Mycobacterium* genus II

Key words: Mycobacteria, Tuberculosis, Antituberculotics, Microdilution broth method, Minimum inhibition concentration

Background: The aim of this diploma thesis has been screening of *in vitro* antimycobacterial activity of novel compounds against fast growing strains of the genus *Mycobacterium* (*Mycobacterium smegmatis* and *Mycobacterium aurum*). Another aim has been predicting the structure-activity relationships for tested compounds.

Methods: The technique used for activity determination was microdilution broth method. The value of minimum inhibition concentration for each compound was determined. The evaluation was performed visually and spectrophotometrically using the Alamar blue indicator.

Results: A total of 79 compounds were tested. 22 tested compounds showed significant activity against mycobacteria. The substances were sorted according to the similarity in chemical structure into 10 groups. From a chemical point of view, these were pyrazine and pyridine derivatives. The most antimycobacterial active substances were from the group of 5-alkylamino-*N*-(4-chloro-2-hydroxyphenyl)pyrazine-2-carboxamides. The least active substances were from the group of *N*-substituted pyrazine-2-carboxamide substituted with amino acids. Substituents that were likely to increase antimycobacterial activity of compounds were chlorine, trifluoromethyl and hydroxy group.

Conclusions: The relationships between the structure and activity of the tested compounds were discussed.