

ABSTRACT

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Study programme: Bioanalytical laboratory diagnostics in health care

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Title of diploma thesis: Pathogenesis of infectious disease caused by bacterium *Mycobacterium tuberculosis*

The theoretical part of this diploma thesis is concerned about tuberculosis where the main part of the thesis is focused on pathogenesis of this disease. Tuberculosis is recognized as highly infectious disease leading to the total exhaustion of the organism. The main causative agent of the above mentioned disease is *Mycobacterium tuberculosis*, which is transmitted to respiratory tract *via* inhalation of droplets from infected person and leads to the granuloma formation. For tuberculosis is typical a creation of granulomas, mainly with caseous necrosis. Highly important is accurate diagnosis and appropriately chosen treatment. The treatment consists of a long-term administration of antituberculous drugs in combinations. The development of the resistance to one or more antituberculous is adverse complication within the treatment procedure.

The experimental part of this work pays attention to the testing of antimycobacterial activity of the potential antituberculous. The microdilution broth method was employed for the antimycobacterial activity evaluation, expressed as the minimum inhibitory concentration, i.e. the lowest concentration of the tested compound leading to the growth inhibition of the particular mycobacterial strain.

There were tested 84 compounds in total. The compounds were divided into groups based on similarity in their chemical structures. During the antimycobacterial activity evaluation, the considerable effect, to one or more mycobacterial testing strains, was revealed within 36 compounds. Discussion about the possible relationships between the structure and activity of the most promising compounds is included, as well. Furthermore, compounds with the highest activity are brought into the context of current knowledge.

Keywords: Mycobacteria, Tuberculosis, Pathogenesis, Antituberculous, Microdilution broth method, Minimum inhibition concentration