Abstract

Charles University
Faculty of Pharmacy in Hradec Kralove
Department of Pharmaceutical Chemistry and Pharmaceutical Analysis
Author: Pavlína Niklová
Supervisor: prof. PharmDr. Martin Doležal, Ph.D.
Title of diploma thesis: Pyrazine Derivatives as Potential Drugs I.

Tuberculosis is serious global problem especially due to its fast resistance development to currently used drugs. Therefore drugs used in therapy are only used in combinations to avoid any possible complications due to treatment failure. In addition, global research is focused on finding new potentially successful drugs with sufficient activity against *Mycobacterium tuberculosis*, main cause of the disease, and acceptable safety, therefore suitable for use in TBC therapy.

Research conducted at the Department of Pharmaceutical Chemistry and Pharmaceutical Analysis of Faculty of Pharmacy in Hradec Kralove, Charles University is focused on the synthesis of potential new antituberculotics, especially pyrazine derivatives.

This study deals with the synthesis of five aminopyrazine derivatives by the reaction of aminopyrazine with different alkyl substituted isocyanates using microwave reactor. All of the synthesized compounds were characterized by their melting point, elementar analysis, IR spectra and NMR spectra and then tested *in vitro* for their antimycobacterial, antibacterial and antifungal activities. None of the prepared compounds showed any antibacterial or antifungal activity. Also most of them didn't show any antimycobacterial activity with the exception of *N*-octyl-*N*′-(pyrazine-2-yl)urea. Its minimum inhibitory concentration against *M. tuberculosis* and *M. kansasii* was 25 μg/ml.