Abstract

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Title of diploma thesis: Derivatives of boronic acids as potential drugs I.

The thesis includes the design, synthesis, and biological evaluation of boronic acid derivatives. These derivatives were prepared as hybrid compounds containing an amide linker, combining mainly pyrazinoic acids with 4-aminophenylboronic acid. Pyrazinamide is used as 1st line antituberculosis drug and 4-aminophenylboronic acid is a bioisoster of 4-aminobenzoic acid, which is a crucial precursor in the folate pathway. Bioisosteric replacement of the carboxylic group with boronic acid could afford the ability of the compounds to form a reversible covalent bond toward a potential biological target.

The presented compounds were synthesized in a two-step reaction. The first step was the condensation of 4-aminophenylboronic acid pinacol ester with different derivatives of (hetero)aryl carboxylic acids, that underwent previous activation. The second step was the deprotection of boronic acid pinacol ester to obtain free boronic acids derivatives.

The obtained compounds were screened for their *in vitro* inhibitory activity against *Mycobacterium tuberculosis* H37Ra, *M. tuberculosis* H37Rv and other mycobacterial strains and also for antibacterial and antifungal activity. The compounds were also screened for antiproliferative activity against HepG2, PC-3, and LAPC 4 cancer cell lines. Some compounds exerted promising selective antiproliferative activity.