ABSTRACT

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Title of diploma thesis: Structural modification of haemanthamine

The object of this diploma thesis was to prepare several derivates of alkaloid haemanthamine. Twelve aromatic esters of haemanthamine and two ethers were prepared. Compounds were identified by MS, NMR analysis and optical rotation and screened for their biological activities. Ten prepared derivates were screened for *in vitro* inhibitory activity againts *h*AChE and *h*BuChE. All derivates were considered inactive (IC_{50} > 10 μM). Twelve derivates of haemanthamine were tested for thein antimycobacterial aktivity, using rifampicin as a standard. The most interesting antimycobacterial potencial against *Mtb* H37Ra strain has shown 11-*O*-(4-pentylbenzoyl)haemanthamine (MIC = 3,91 μg/ml), against *M. aurum*: 11-*O*-(4-*terc*butyllbenzoyl)haemanthamine, 11-*O*-(1-naftoyl)haemanthamine a 11-*O*-(4-butylbenzoyl)haemanthamine (MICs = 7,81 μg/ml), against *M. avium*: 11-*O*-(4-pentylbenzoyl)haemanthamine, 11-*O*-(4-hexylbenzoyl)haemanthamine (MICs = 31,25 μg/ml), against *M. kansasii*: 11-*O*-(4-pentylbenzoyl)haemanthamine (MIC = 3,91 μg/ml), 11-*O*-(4-hexylbenzoyl)haemanthamine (MIC = 7,81 μg/ml), against *M. smegmatis:* 11-*O*-(1-naftoyl)haemanthamine (MIC = 7,81 μg/ml). Seven derivates were tested for antimicrobial activity against variol strains of microorganisms. All derivates were considered inactive (MIC > 125 μM/l). Derivates with the most interesting antimycobacterial activity are currently being tested for their toxicity against HepG2 cells.

Keywords: haemanthamine, synthesis, analogues, biological activity