

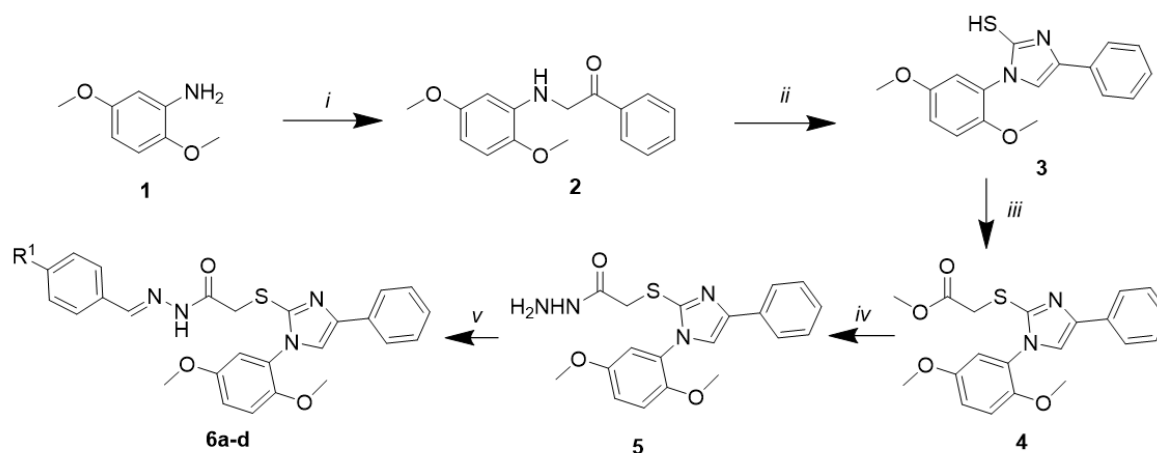
# SYNTHESIS OF NEWIMIDAZOLE-2-THIOLES CONTAINING HYDRAZONE MOIETY

Tomas Tutkus<sup>1</sup>, Birutė Sapijanskaitė-Banevič<sup>1</sup>

<sup>1</sup>Kaunas University of Technology, Department of Organic Chemistry, Lithuania  
tomas.tutkus@ktu.lt

Imidazole fragment containing derivatives exhibit antibacterial, antifungal, antiviral, anti-inflammatory, antitumor activity and it is present in many pharmacologically important drugs such as Metronidazole, Ketoconazole, Megazol, Dicarbazine [1].

In this work, a series of imidazole-2-thiole derivatives containing a hydrazone moiety were synthesized.



**6a:** R<sup>1</sup> = H; **6b:** R<sup>1</sup> = F; **6c:** R<sup>1</sup> = Cl; **6d:** R<sup>1</sup> = Br

Reagents and reaction conditions: (i) 2-bromoacetophenone, NaHCO<sub>3</sub>, MeOH, 25 °C, 4 h; (ii) KSCN, AcOH, Δ, 1 h; (iii) methyl bromoacetate, K<sub>2</sub>CO<sub>3</sub>, CH<sub>3</sub>COONa, 1,4-dioxane, Δ, 1 h; (iv) hydrazine monohydrate, 2-propanol, Δ, 4 h; (v) corresponding aromatic aldehyde, AcOH, 2-propanol, Δ, 2-5 h.

**Fig. 1.** Synthesis of imidazole-2-thioles containing a hydrazone moiety

Firstly, to obtain precursor **2**, primary amine **1** was treated with 2-bromoacetophenone in methanol at room temperature in the presence of catalytic amount of sodium bicarbonate. For the imidazole ring formation, cyclisation reactions of amine ketone **2** was carried out with thiocyanate in an acidic condition to afford compound **3**.

Methyl 2-[1-(2,5-dimethoxyphenyl)-4-phenyl-1*H*-imidazol-2-yl]thioacetate **4** was synthesized via alkylation of imidazole-2-thiole with methyl bromoacetate using potassium carbonate and sodium acetate as base. Acid hydrazide **5** was easily obtained by refluxing methyl ester **4** with hydrazine monohydrate in 2-propanol.

Condensation of hydrazide **5** with various aromatic aldehydes in 2-propanol under reflux for 2-5 hours resulted the hydrazones **6a-d**.

The structures of compounds **2-6** have been confirmed by elemental analysis, <sup>1</sup>H and <sup>13</sup>C NMR spectral data.