

SYNTHESIS OF NEW IMIDAZOLE-2-THIOLES CONTAINING CARBAZOLYL MOIETY

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The imidazole scaffold can often be found in a wide variety of bioactive compounds, it serves as the fundamental core of numerous natural products, including histidine, purine, histamine and DNA-base structures[1]. Imidazole derivatives have garnered significant attention in medicinal chemistry due to their diverse biological activities, such as antifungal properties. Clinically, imidazole-based compounds, particularly Miconazole, Econazole, Ketoconazole and Clotrimazole, are widely used to treat yeast and fungal infections[2].

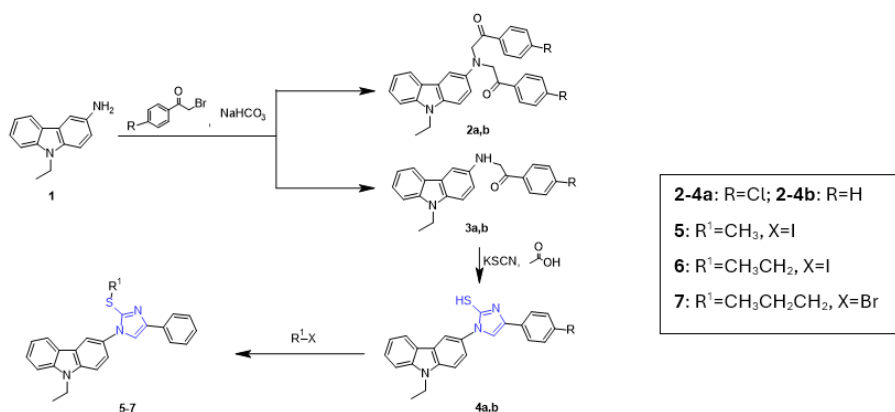


Fig. 1. Synthesis of imidazole-2-thioles containing carbazolyl moiety

In this work, we investigated reactions of 3-amino-9-ethylcarbazole with α -haloketones. The reaction of 3-amino-9-ethylcarbazole **1** with α -haloketones in methanol at room temperature in the presence of sodium bicarbonate resulted in formation of mixture of mono- and bis-addition products. The yields of the formed compounds **2a,b** and **3a,b** depended on the duration of the reaction. Subsequently, 1-(4-chlorophenyl)-2-((9-ethyl-9H-carbazol-3-yl)amino)ethan-1-one **3a** and 2-((9-ethyl-9H-carbazol-3-yl)amino)-1-phenylethan-2-one **3b** have been cyclized to imidazolethiols **4a,b** during the reaction with potassium thiocyanate in glacial acetic acid. Obtained compound **4b** have been alkylated with various haloalkanes resulting in formation of compounds **5-7**.

The structures of compounds **2-4a,b** and **5-7** have been confirmed by elemental analysis, ¹H and ¹³C NMR spectral data.

[1] Benas Balandis, Povilas Kavaliauskas, Birutė Grybaitė, Vidmantas Petraitis, Rūta Petraitienė, Ethan Naing, Andrew Garcia, Ramunė Grigalevičiūtė, Vytautas Mickevičius // *Microorganisms*, 2023, 11, 935, doi:10.3390, 1-14.

[2] D. Serdaliyeva, T. Nurgozhin, E. Satbayeva, M. Khayitova, A. Seitaliyeva, and L. Ananyeva, "Journal of Clinical Medicine of Kazakhstan," *J. Clin. Med. Kazakhstan*, vol. 19, no. 3, pp. 11–15, 2022, doi:10.23950/jcmk/12117.