

POSTER PRESENTATIONS

SYNTHESIS AND STUDY OF THE STRUCTURE OF 5-AMINO-1,3,4-THIADIAZOLE-2-THIOL DERIVATIVES

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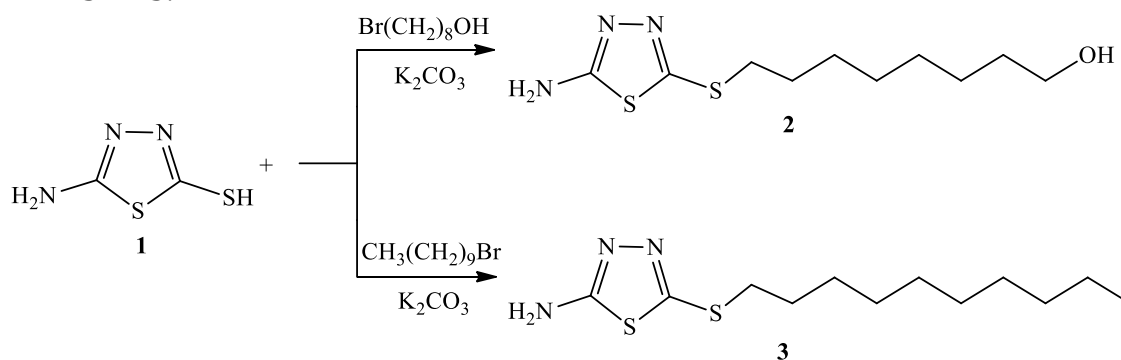
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Thiadiazole is a five-membered heterocyclic compound that has several isomers (1,2,3, 1,2,4, 1,2,5, and 1,3,4-thiadiazoles). The most widely studied form is 1,3,4-thiadiazole; representatives of this group possess broad biological activity and are widely used in medicine. They possess antibacterial, antifungal, anti-tuberculosis, anti-inflammatory, anticonvulsant, antitumor, and antiparasitic activities [1]. Therefore, in our research, we aimed to synthesize 8-((5-amino-1,3,4-thiadiazole-2-yl) thio) octane-1-ol and 5- (decylthio) -1,3,4-thiadiazole-2-amines and study their structure.

Two new compounds, 8-((5-amino-1,3,4-thiadiazol-2-yl) thio)octan-1-ol (**2**) and 5-(decylthio) -1,3,4-thiadiazol-2-amine (**3**), were synthesized via a nucleophilic substitution reaction between 5-amino-1,3,4-thiadiazole-2-thiol (**1**) and bromo-octanol and decyl bromide, respectively. Initially, 5-amino-1,3,4-thiadiazole-2-thiol was dissolved in DMF. K₂CO₃ and a haloalkane (or haloalkanol) were added to the solution, and the reaction was conducted at 50–60 °C. The yields of the synthesized compounds **2** and **3** were 78% and 93%, respectively. The chemical and spatial structures of the synthesized substances were confirmed by IR, UV, 1D and 2D NMR spectroscopy, and HR-ESI-MS.



Thus, two new compounds were synthesized via a nucleophilic substitution reaction between 5-amino-1,3,4-thiadiazole-2-thiol and alkyl bromides, and their structures were subsequently studied. The results obtained will serve as a basis for the future development of pharmaceuticals based on these compounds.

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References:

1. Yang H., Cui-Yun L., Xiao-Ming W., Yong-Hua Y., Hai-Liang Z. 1,3,4-Thiadiazole: Synthesis, Reactions, and Applications in Medicinal, Agricultural, and Materials Chemistry // Chemical Reviews. 2014. Vol. 114. P.5572–5610.