A New and Facile Synthesis of Novel Pyrazolothienopyrimidines and Imidazopyrazolothienopyrimidines

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Abstract:

4-Amino-3-methyl-1-phenyl-1H-thieno[2,3-c]pyrazole-5-carboxamide (5), which was synthesized by an innovative method, was used as a versatile precursor for synthesizing pyrazolothienopyrimidines and imidazopyrazolothienopyrimidines compounds. Reaction of amino thienopyrazole carboxamide 5 with triethyl orthoformate afforded thienopyrazolopyrimidine 6. Chlorination of the latter compound, using phosphorus oxychloride afforded the chloro pyrazolothienopyrimidine 7, which underwent nucleophilic substitution reactions with various primary and secondary amines to give the alkyl (aryl) amino pyrimidine compounds 8a-d. On the other hand, the reaction of chloropyrimidine 7 with thiourea afforded the pyrimidine thione compound 9, which was alkylated with β-halogentaed compounds to afford the S-alkylated derivatives 10a-c. Also, chloroacetylation of the amino carboxamide 5 using chloroacetyl chloride yielded the chloromethyl pyrazolothienopyrimidine 12, which underwent nucleophilic substitution reactions with various primary and secondary amines to afford the alkyl (aryl) aminomethyl compounds 13a-f. The latter Compounds underwent Mannich reaction to give imidazopyrimidothienopyrazoles 14a-c. The newly synthesized compounds and their derivatives were fully characterized by elemental and spectral analysis.

Keywords:

Synthesis; Reactions; Pyrazoles; Pyrazolopyrimidine; Pyrazoloimidazopyrimidine

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