

9th Edition of International Conference on **Chemistry Science and Technology**
&
11th International Conference & Expo on **Chromatography Techniques**

April 22-24, 2019 Dublin, Ireland

Solvent-free synthesis and characterization of 6-chloro-3-alkyl/aryl/heteroaryl-1,2,4-triazolo[4,3-b]pyridazinesMamta Khokhar and Ranjana Aggarwal
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The 1,2,4-Triazole nucleus is an important five-membered heterocyclic scaffold, which is found in large number of marketed drugs. Pyridazine ring has known to be present in several natural products and drugs. A number of synthetic methods have been developed for the synthesis of 1,2,4-Triazolo[4,3-b]pyridazine derivatives which involve the oxidation of hydrazones with various reagents such as lead tetra acetate, bromine, nitrobenzene, copper dichloride, mixture of Me₄NBr and oxon etc. Unfortunately, most of these methods suffer from various disadvantages such as hazardous materials, poor yield and longer reaction time at higher reaction temperature. Utility of iodobenzene diacetate (IBD) in oxidative transformation is a valuable strategy for greener synthesis because of its easy availability, mild reaction condition and ease of handling. In view of these observations, solvent-free protocol synthesis was developed in the present study for the synthesis of 6-chloro-1, 2, 4-triazolo[4,3-b]pyridazines using iodobenzene diacetate (IBD) as an eco-friendly agent. Initially, a mixture of 3,6-dichloropyridazine was refluxed with one equivalent of hydrazine hydrate in tert-butylalcohol which furnished 6-chloro-3-hydrazinopyridazine after four hours. Further, one moles of benzaldehyde was homogenized with one equivalent of the second reaction mixture and was grinded in pestle and mortar at room temperature. The reaction was regularly monitored at short intervals by thin layer chromatography (TLC) which indicated the completion of reaction in 20 minutes and a new spot appeared. Then 1.1 equivalents of IBD were added *in situ* and the reaction mixture was grinded for another 1 hr. Formation of 3 was confirmed on the basis of TLC and spectral data. ¹H NMR spectra of compounds 3 displayed pair of doublets for H-4 and H-5 of pyridazine ring at 7.1-8.4 ppm and 7.0-8.1 ppm respectively with coupling constant 3J = ~ 9.2 Hz.

Biography

Mamta Khokhar is a Research Scholar at Kurukshetra University, Kurukshetra, India and pursuing research under the kind supervision of Prof. Ranjana Aggarwal. Her research interests are to synthesize nitrogen containing heterocyclic compounds of biological significance. Compounds which she were synthesized during her PhD evaluated for cytotoxicity and some of the compounds give promising activity.

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