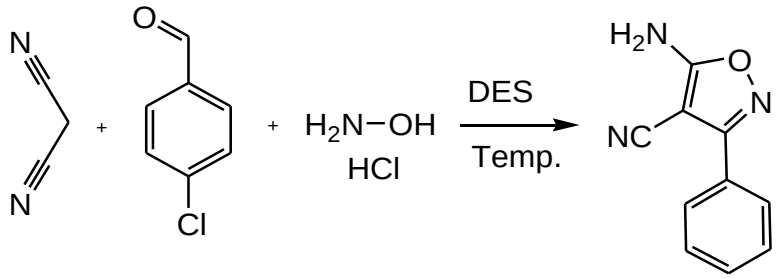
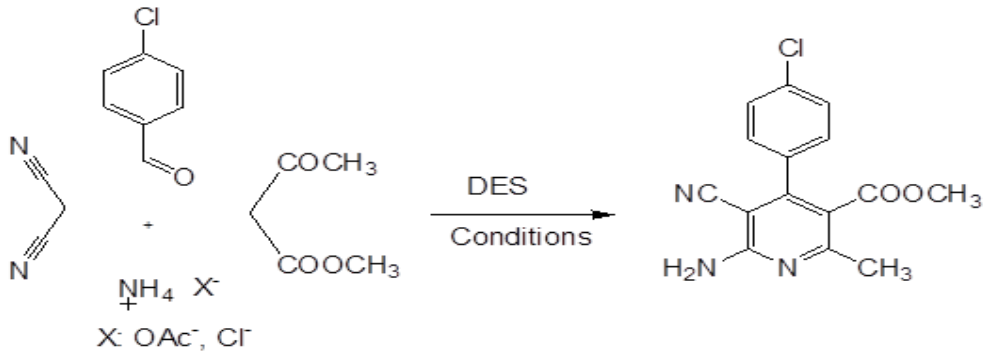
Abstract

Isoxazole and pyridine derivatives are two class of aromatic heterocyclic compounds for which many medical and biological effects have been reported. In this study, a new and more efficient method for the synthesis of these important compounds in the presence of deep eutectic solvents is reported. The three component reaction of malononitrile, aromatic aldehydes and hydroxylamine hydrochloride was used for the preparation of isoxazole derivatives and a multicomponent reaction between malononitrile, aromatic aldehydes, methyl acetoacetate and ammonium acetate was applied for pyridine derivatives. Many deep eutectic solvents was examined for the reactions and urea-choline chloride mixture was chosen. The optimum conditions for this reaction such as solvent, and temperature is determined and the products were obtained with good to excellent yields and acceptable purity. This process merits advantages such as mild conditions, easy work-up, completion of the reactions in shorter reaction times, excellent yields of the products. No use of harmful organic solvents, no extra catalyst and oxidant are among the other most importat characteristics of the present methodologies.



The synthesis of isoxazole-4-carbonitrile derivatives in of urea/choline chloride deep eutectic solvent.



Reaction for the synthesis of pyridine derivatives with asymmetric substitution pattern response pyridin-3-carboxylate

Keywords: Pyridine, Isoxazole, Green Chemistry, Deep Eutectic Solvent

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Study of Poly-substituted heterocyclic Isoxazole and Pyridine derivatives synthesis under new green reaction conditions in the presence of novel eutectic solvents

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