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One-pot multicomponent synthesis of pyrimidine compounds in the presence of acidic ionic liquid triethyl (butyl-4-sulfonic acid) ammonium hydrogen sulfate

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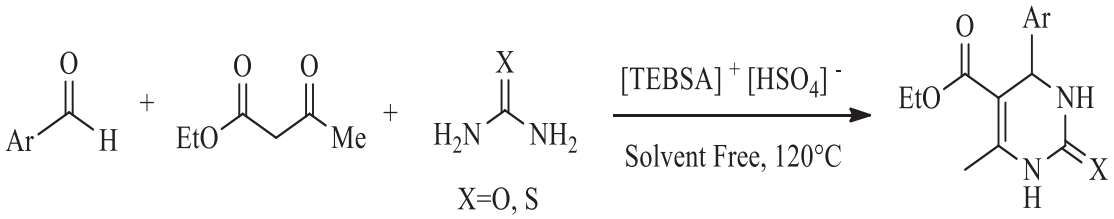
The extensive use of toxic and volatile solvents in the chemical industries leads to serious environmental damage. Therefore, finding suitable replacements for these solvents that are environmentally friendly is urgently needed in the pharmaceutical and chemical sectors. Ionic liquids, due to their very low vapor pressure, have attracted the attention of many scientists as green solvents or catalysts in multi-component one-pot reactions. Speed, diversity, efficiency, and eco-friendliness are some of the key aspects of these reactions. The synthesis of heterocycles containing nitrogen, oxygen, and sulfur, which are structural units in many natural products and active pharmaceutical ingredients, is highly significant using this efficient one-pot multi-component method. The heterocyclic pyrimidine compounds have important biological and pharmaceutical applications [1-3]. So, herein, triethyl (butyl-4-sulfonic acid) ammonium hydrogen sulfate ($[TEBSA]^+[HSO_4]^-$) as an acidic ionic liquid was synthesized, identified by IR and NMR analyses, and then utilized for its catalytic properties in the one-pot three-component synthesis of pyrimidine derivatives from condensation of aldehydes with thiourea or urea and ethyl acetoacetate under solvent-free conditions.



Scheme: Synthesis of dihydropyrimidine derivatives in the presence of acidic ionic liquid

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