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Nano NiO-an efficient and a reusable catalyst for the one-pot synthesis of novel tetrahydropyridine-3-carboxylates under sonication

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Abstract

An elegant, atom efficient protocol for the synthesis of a series of pharmacologically interesting polysubstituted tetrahydropyridine-3-carboxylates has been developed *via* a one-pot four-component cyclocondensation reaction of Meldrum's acid, arylaldehydes, aromatic amines and ethyl cyanoacetate catalyzed by NiO nanoparticles in ethanol under ultrasound irradiation. In comparison with the reported methods, our approach is convenient and offers several benefits such as milder reaction conditions, shorter reaction time, excellent yields, and use of reusable catalyst and is environmentally benign. We have herein demonstrated a successful conjunction of NiO nanoparticles and sonication in the synthesis of tetrahydropyridine-3-carboxylates by multicomponent approach.

Keywords:

NiO nanoparticles Ultrasonic irradiation Tetrahydropyridine-3-carboxylates One-pot synthesis Multicomponent reaction

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