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A sustainable ultrasound assisted synthesis of tetrahydrobenzo[*b*] pyran derivatives using modified ZnO-Al_2O_3 through eco-compatible multicomponent reaction

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ABSTRACT In the present work, we have investigated a sustainable method for the synthesis of tetrahydrobenzo[*b*]pyran derivatives by eco-compatible multicomponent reaction of substituted benzaldehyde with 5,5-dimethylcyclohexane-1,3-dione and malononitrile in the presence of modified ZnO-Al_2O_3 as a catalyst in ethanol under conventional reflux conditions and non-conventional ultrasound irradiation methods. The present protocol offered several crucial advantages, including green technique, wide substrate applicability, excellent yield of targeted compounds, short reaction time, recyclability of the catalyst, simple work-up procedure, and purification without column chromatography.

KEY WORDS 5,5-Dimethylcyclohexane-1,3-dione, Malononitrile, Multicomponent reaction, Ultrasound irradiation, Tetrahydrobenzo[*b*]pyran and ZnO-Al_2O_3 etc.

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