Ultrasonic-assisted synthesis of tetrahydropyrimidine derivatives using functionalized core-shell nano-catalyst

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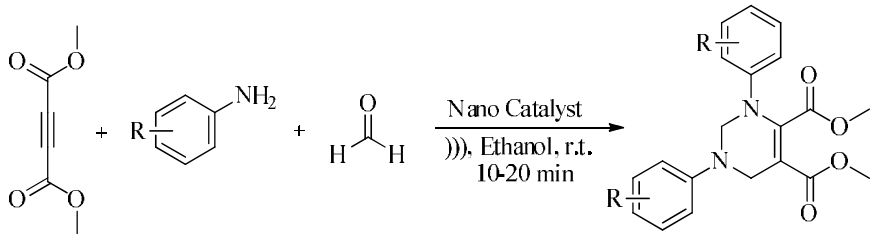
Pyrimidines and their analogues hold a special place among pharmaceutically significant natural products and synthetic compounds [1]. Tetrahydropyrimidine scaffold has displayed a fascinating array of pharmacological and biological activities such as antihistaminic, antibacterial activity and is the core unit in several biologically active HIV protease inhibitors, mycobacterium tuberculosis inhibitors and have served as muscarinic receptor agonists for treatment of Alzheimer's disease [2,3]. Hence, the synthesis of this class of compounds has gained great importance in organic and medicinal chemistry.

A survey of literature revealed that very few synthetic methods are reported for the synthesis of polysubstituted 1,2,3,6-tetrahydropyrimidines, which were also associated with drawbacks like low yields, high temperature, toxic catalysts, long reaction time, tedious work up and purification. Herein, we wish to report the sonically enhanced method for the synthesis of different 1,2,3,6-tetrahydropyrimidine derivatives via the one-pot reaction of dimethyl acetylenedicarboxylate (DMAD), aniline derivatives and formaldehyde in the presence of functionalized core-shell nano-catalyst under green chemistry conditions.



Scheme 1

References:

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3. S. M. Sondhi, S. Jain, M. Dinodia, *Bioorg. Med. Chem.* 15 (**2007**) 3334.