



Zinc Montmorillonite – A Harmonious Clay Catalyst for the Synthesis of Hantzsch 1,4-Dihydropyridine Antimicrobial Agents

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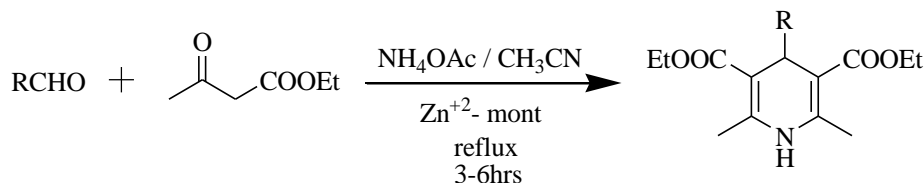
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ABSTRACT

A series of 1,4-dihydropyridines were accomplished by zinc-montmorillonite catalysed one-pot synthesis using a reaction between aldehydes, ammonium acetate and ethyl acetoacetate in ethanol - dimethyl formamide (3:1) under reflux conditions. Out of the ten analogs, methoxy, methyl, isopropyl and 4-nitro substituted analogues have exhibited higher antibacterial activity and antifungal activity. The binding energies measured using molecular docking studies, too, found in agreement with activity conforming the invitro studies. The interaction between the protein and the compounds proposed in this study are useful for understanding the potential mechanism of inhibitor binding.

Graphical Abstract:



R= 4-OCH₃-Ph-, 4-F-Ph, 4-Cl-Ph, 4-Me-Ph, 4-ⁱPr-Ph, 4-^tBu-Ph, 4-NO₂-Ph, 3-NO₂-Ph, 4-OH-Ph, 2-Naphthyl

Keywords: Multi component reactions (MCRs), 1,4-dihydropyridines, zinc montmorillonite, Ethanol-DMF (3:1), Antimicrobial activity.