

Synthesis of benzoimidazoquinazolinone and indolyxanthenone derivatives using Keggin-type heteropoly-11-molybdo-1-vanadophosphoric acid supported on Montmorillonite K-10 clay as catalyst: a green approach

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Abstract

Biologically as well as medicinally important two different organic scaffolds, viz. benzimidazole and quinazoline, are present in the class of heterocyclic compounds called benzimidazoquinazolinone. Similarly, indolyxanthenones are the compounds containing two important organic moieties such as indole and xanthen. In this work, a new green protocol for the synthesis of benzoimidazoquinazolinone and indolyxanthenone derivatives was attained under environmental-friendly solvent-free condition through a simple one-pot three-component condensation reaction. This condensation was achieved by using 10% heteropoly-11-molybdo-1-vanadophosphoric acid ($H_4[PVMo_{11}O_{40}]$)-loaded Montmorillonite K-10 clay material (PVMoK-10) as an efficient heterogeneous catalyst. The identification and characterization of the derivatives were done by physical as well as spectral techniques. Synthesis of ten derivatives of benzo[4,5]imidazo[2,1-b]quinazolin-1(2H)-one and two derivatives of 9-(1H-indol-3-yl)-2,3,4,9-tetrahydro-1H-xanthen-1-one was successfully achieved using this protocol. A tentative reaction mechanism has also been proposed for the synthetic plans.

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