Synthesis of Novel Derivatives of Ethyleneglycol Isatin Ketal under Solvent-Free Conditions

Gholamhassan Imanzadeh, Zahra Soltanizadeh, Mohammadreza Zamanloo, Yagoub Mansoori

Department of Chemistry, College of Science, University of Mohaghegh Ardabili 56199-11367, Ardabil, Iran

Over the past decade, the environmental protection and waste prevention have been an increasing emphasis among researchers from both academia and industry [1]. For this reason, the elimination or reduce of volatile solvents in organic synthesis is a most important goal in Green chemistry [2]. Isatin and its derivatives have proved to be versatile starting material for the synthesis of natural products, heterocyclic, and non-cyclic compounds [3]. Isatin and some of its derivatives are also pharmacologically relevant, for example isatin inhibits natriuretic peptide-induced hyperthermia in rats [4], and some of its semicarbazones show anticonvulsive activity [5]. Herein we report the synthesis of a new series of ethyleneglycol ketals of isatin 3 by Michael addition of ketal 2 to $\alpha,\beta$-unsaturated esters in the presence of tetrabutylammonium bromide (TBAB) and 1,4-Diazabicyclo[2.2.2]octane (DABCO) under solvent-free conditions.

The products were obtained in good to high yields within 1 h. Although the reaction was applicable to acrylates such as n-butyl acrylate, methacrylates and crotonates were not suitable Michael acceptors for this reaction. TBAB was recovered and reused for three times without notable reduction in its catalyst properties. We used the $^1$H NMR (300 MHz) and $^{13}$C NMR (75 MHz), Mass, IR, technique to characterization of all products structure.

REFERENCES