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ISOQUINOLINE PROMOTED SYNTHESIS OF ARYL VINYL ETHERS FROM HETEROCYCLIC PHENOLS

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Abstract: 7-Hydroxycoumarin undergoes a smooth reaction with dialkyl acetylene dicarboxylates in the presence of isoquinoline to produce the corresponding alkyl dimethyl 2-((2-oxo-2H-chromen-7-yl)oxy)fumarate in good yields. When the reaction was performed by 6-hydroxyquinoline similar aryl vinyl ethers were obtained.

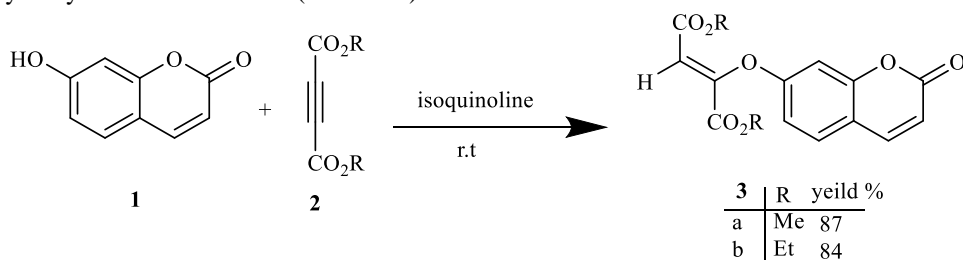
Keywords: 7-hydroxycoumarin, 6-hydroxyquinoline, vinyl ethers, Dialkyl acetylene dicarboxylates, Isoquinoline.

1. INTRODUCTION

Multicomponent reaction has emerged as one of the powerful and efficient tools for the synthesis of structurally diverse molecules and many newly designed reactions have been successively reported. Due to the environmental demand, there has been considerable interest in developing a new catalyst for organic reactions that would be mild, easily available at low-cost, high performance in transformation and wide applicability [1-5].

On the other hand the addition of aliphatic or aromatic phenol to the activated alkynes results in an active intermediate vinyl ester, building blocks and auxiliaries in organic synthesis, steadily expands their scope of applications. These compounds are important raw materials as practical chemicals for the production of glutaraldehyde as well as vinyl polymer materials containing oxygen, which are expected to degrade easily in nature. Moreover, there are many studies on the reaction between acetylenic esters and phenols in organic solvents or under solvent-free conditions to produce fumarate or maleate isomer as the major product [6-11].

We also successfully reported several new multicomponent reactions by using of heterocyclic phenols with electron-deficient alkynes such as dialkyl acetylenedicarboxylate and alkyl propiolate [12, 13]. In continuation of our current interest in the application of OH-acids and activated acetylenes in organic synthesis, we report here a simple one-pot synthesis of functionalized aryl vinyl ether derivatives **3** (Scheme 1).



Scheme 1

2. EXPERIMENTAL

2.1 General

IR spectra were measured with a Shimadzu IR-460 spectrometer. ¹H and ¹³C spectra were determined on a Bruker DRX-300 Avance instrument in CDCl₃ at 300 and 75 MHz, respectively; with δ in ppm and J in Hz. ¹H and ¹³C NMR spectra were obtained from solutions in CDCl₃ using TMS as internal standard. All the chemicals used in this work were purchased from Fluka (Buchs, Switzerland) and were used without further purification.