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ORIGINAL ARTICLE

Sulfated zirconia as an efficient heterogeneous and reusable catalyst for one pot synthesis of flavanones

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Abstract A simple and one pot process for the synthesis of flavanones in the presence of SO_4^{2-}/ZrO_2, a reusable, heterogeneous catalyst has been described. The reactions were conducted both with and without solvent (using toluene as solvent) at 140 °C with reaction times of 3–4 h. Under these conditions several examples were found with very good yields (73–87%) and up to 83% selectivity. The catalyst was easily recycled and reused without loss of its catalytic activity. The present synthetic method is a simple, clean and environment friendly alternative for synthesizing substituted flavanones.

1. Introduction

The flavanones are a class of naturally occurring polyphenolic compounds which are extensively distributed in vascular plants (Lee et al., 2007). These are minor ingredients of the human diet, (Kabalka and Mereddy, 2005; Bennardi et al., 2007) the most abundant being the flavanones. Members of this class have been shown to display a wide variety of biological activities, (Viuda-Martoz et al., 2008) such as antioxidant effect, inhibition of HIV-1 proteinase, and anticancer (Yanling et al., 2007), vasodilator, antiviral and antiallergenic (Alan and Miller, 1996), in addition to antimicrobial (Cushnie and Lamb, 2005; Young et al., 2007), anti-inflammatory (Pan et al., 2010) activities. The curiosity in the biological properties of flavanones has resulted extreme synthetic efforts toward the synthesis of different flavanones. There are number of methods available for the synthesis of flavanones and their analogs. The general methods to obtain flavanones are the cyclization of 1,3-diphenylpropane-1, 3-diones or *o*-hydroxychalcones (Lee et al., 2007; Pathak et al., 2008) and Baker and Venkataraman rearrangement wherein *o*-hydroxyacetophenone is benzoylated to form the benzoyl ester (Diana et al., 2000;

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