Research in Pharmaceutical Sciences, 2012;7(5)
School of Pharmacy and Pharmaceutical Sciences
Isfahan University of Medical Sciences

An efficient synthesis of tetrahydrobenzo[b]pyran derivatives using NaF as an efficient catalyst

A. Masoumnia*, S. Kiaee, J. Aboonajmi, N. Hazeri

Department of chemistry, School of chemistry, Zahedan University of Sistan and Blouchestan, Zahedan, Iran

Background and Aims: The development of new methodologies for the synthesis of chromenes and their derivatives are a subject of continuous interest to synthetic/medicinal chemists because their derivatives have versatile biological and medicinal properties and are widely present in various biologically active natural products.
Methods: A mixture of a malononitrile (1 mmol), aldehyde (1 mmol) and dimedone (1 mmol) in thanol/water (1:1) and was NaF (30% mol) added. Than, the mixture was heated 40-550C for the appropriate time. The reaction was monitored by (TLC) using ethyl acetate/petroleum benzene (1:3) as eluent. was stirred to afford the tetrahydrobenzo[b]pyran. After the reaction, solid product from catalyst was separated by filtration, and after recrystallisation from ethanol, pure product derivatives were obtained.
Results: As part of our continued interest in the development of highly expedient methods for the synthesis of heterocyclic compounds of biological importance, we report here a very simple and highly efficient method for the synthesis of pyran annulated heterocyclic system via a three-component reaction of an aldehyde , malononitrile and dimedone and in the presence high surface area NaF as a highly effective catalyst
Conclusions: We have developed a novel efficient methodology for the synthesis of tetrahydrobenzo[b]pyran and derivatives via one-pot multicomponent reactions. The catalyst NaF is efficient, safe and inexpensive. Moreover, the experimental procedure for this reaction is remarkably simple and without the use of hazarded and/or expensive organic solvents.

Keywords: Tetrahydrobenzo[b]pyran; NaF; Dimedone