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A Spectral Analysis Of Some Representative Synthesised Chromone Derivatives

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Abstract

Nine chalcones were prepared by grinding equimolar quantities of formyl pyrazole 3-(2, 4-difluorophenyl)-1-(4-fluorophenyl)-1H-pyrazole-4-carbaldehyde and various substituted o-hydroxy acetophenones in presence of potassium hydroxide in solvent free condition. This type of preparation method was found to be efficient, simple in terms of excellent yields, short reaction time and afford single product as illustrated in TLC. The prepared compounds were characterized by means of their IR, ¹H NMR spectral data and Mass spectrometry. This synthetic method shows potential alternative to the conventional methods.

Keywords: Chromones, DMSO, Spectral, derivatives

Introduction

Chromone¹ were well known and important oxygen containing six membered heterocyclic compound and different method have been work out for its preparation. Following chromone derivatives have been found to possess considerable biological activities. It has various marked effects, such as antimicrobial, anti-microbacterial, anti-inflammatory, anti-analgesic and antidepressant activities². A large number of chromone moiety using different synthetic method for its preparation have been described in the chemistry literature. Most frequently used procedure were based on the reaction of α, β -unsaturated aldehyde and ketone with DMSO/I₂. However a series of specially substituted representative chromone derivatives have been synthesized rarely. For this reason the purpose of our present study was to synthesize systematically substituted chromone derivatives for the study of its antimicrobial activity in future.³⁻⁴ Among the method used for preparation of chromone, oxidative cyclisation of substituted chalcones⁴ with DMSO/I₂ and its derivatives were commonly employed. Chromones conveniently prepared by treatment of $\alpha \beta$ unsaturated carbonyl compounds with DMSO/I₂ reagents. Pyrazole moiety containing compounds are associated with bactericidal⁵, anti-inflammatory⁶ and hepatoprotective⁷ activities. 2-(1,3-Diphenyl-1H-pyrazol-4-yl)-3-chlorochromones⁸ reported by us earlier were found to be associated with excellent antibacterial and antifungal activities. Oxygen containing heterocyclic compounds like chromones have received considerable attention in recent years due to their biological activities like anti-inflammatory,⁹ analgesic, anticonvulsant,¹⁰ and antidiabetic.¹¹ Chromones and their derivatives are also reported to possess antiproteolytic,¹² antibacterial, antifungal and antiviral¹³ activities. Many substituted chromones are known to possess acaricidal¹⁴ activities and are used in the treatment of cerebral edema.¹⁵ Chromones are found to be useful as antioxidants.¹⁶