

Imidazo[1,2] Coumarin analogues: Synthesis and antioxidant properties

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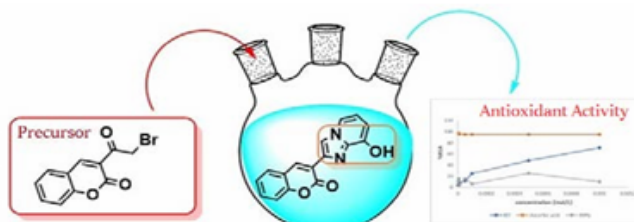
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Research Article

Abstract

Two coumarin derivatives, namely 3-benzo[d]imidazo[2,1-b]thiazol-2-yl)-chromen-2-one (IBT) and 3-(8-hydroxy-imidazo[1,2-a]pyridin-2-yl)-chromen-2-one (IMPY), were synthesized and their antioxidant properties were investigated using spectrophotometric methods. The percentage of radical scavenging activity (%RSA) for each compound was determined using the α , α -diphenyl- β -picrylhydrazyl (DPPH) assay method. A comparative analysis of the %RSA values obtained with those of ascorbic acid, a well-known antioxidant, revealed that both IBT and IMPY exhibited considerable antioxidant activity, indicating their potential as antioxidants. IBT demonstrated moderate antioxidant properties, with an %RSA value of 70.65% at a concentration of 10^{-3} M, which was slightly lower than that of ascorbic acid, but still significant.

Keywords: Coumarin, Antioxidant, Radical scavenging activity, DPPH, Imidazobenzothiazole, Spectrophotometric Study



INTRODUCTION

Coumarins are classified as a member of the benzopyrone family which were isolated in 1820 from Tonka beans whose vernacular name is 'Coumarou'. Coumarins are of four main subtypes, namely the simple coumarins, furanocoumarins, pyranocoumarins and the pyrone-substituted coumarins. Simple coumarins comprise of hydroxylated, alkoxyated and alkylated derivatives of the parent compound, coumarin, along with their glycosides. While, furanocoumarin comprises of a five-membered furan ring attached to the coumarin nucleus, divided into linear or angular types with substitution at one or both of the remaining benzoid positions. Members which are analogous to the furanocoumarins. but contain a six-membered ring are called

plants usually contain a large variety of Coumarin with the richest sources being the Rutaceae and Umbelliferon.

Coumarins are present at the highest levels in the fruits, followed by the roots, stems and leaves i.e. it is distributed throughout all parts of the plant. But environmental conditions and seasonal changes greatly influence its occurrence in the diverse parts of the plants. Recently, six new minor coumarins have been isolated from the fruits and the stem bark of *Calophyllum dispar* (Clusiaceae). The genus *Calophyllum*, which comprises 200 species, is widely distributed in the tropical rain forest where several species are used in folk medicine. Coumarins are known for their diverse pharmacological properties.¹