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New method for the synthesis of β-ketoindoles derivatives by microwave irradiation: A green method

Gilberto Lucio Benedito de Aquino
State University of Goias, Brazil

The addition of indole to substituted α-β-unsaturated ketones forms the β-ketoindole, compounds in studies, which show high selectivity for neuronal cells, making its labeling with radionuclides a new imaging biomarker for the diagnosis of Ahzheimer Diseases. β-ketoindole arouse attention from organic chemists because of their presence in many pharmacologically and biologically active compounds. β-ketoindoles derivatives can be obtained by a variety of methods, including the condensation of indole with α,β-unsaturated ketones *via* Michael addition, addition of Friedel-Crafts or Aza-Diels-Alder reactions. The addition of Michael and Friedel-Crafts are mediated by protic or Lewis acids and the Aza-Diels-Alder reaction uses toluene/xylene as the solvent. The use of microwave irradiation in organic synthesis has gained prominence in recent years. The method promotes a reduction in reaction times, improvements in the purity and yield of the products, reduction in the amount of solvents and reduction in the levels of secondary products, making it a green and sustainable method. This study focus in the synthesis of chalcone and in the use of organic p-toluenesulfonic acid as a catalyst for the synthesis of β-ketoindoles, a fast and easy new procedure that allows the synthesis *via* microwave irradiation. The yields obtained through the synthesis of β-ketoindoles derivatives by microwave irradiation optimization method were satisfactory, reaching at 97%. This method proved to be highly effective compared to other traditional synthesis methods, since it occurs in a shorter time and uses smaller amounts of reagents, considered an organic synthesis technique combined with green chemistry.

Biography

Gilberto Aquino has completed his PhD at the age of 30 years from São Paulo University and postdoctoral studies from Coimbra University department of chemistry. He is the professor of State of University of Goias. He has published more than 25 papers in reputed journals and has been serving as an editorial board member of repute.

gilberto.benedito@ueg.br

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