



Research Article

Microwave Assisted Synthesis and Anti-inflammatory Activity of Substituted Pyrazole Derivatives

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ABSTRACT

Microwave assisted Organic Reaction Enhancement (MORE) has emerged as a new 'lead' in organic synthesis. The technique offers simple, clean, fast, efficient, and economic and environment friendly method for the synthesis of a large number of organic molecules. During our studies, the conventional synthesis of a series of some new substituted 3, 5 dimethyl pyrazole (4a-c), 3-methyl pyrazol-5-one derivatives (5a-c), 3-Methyl- 1- (substituted phenyl) pyrazol-5-ones (7a-b) and 2, 3-dimethyl- 1- (substituted phenyl) pyrazol-5-one (8a-b) required time (12-16 h) and the yield were often poor (36.9-48.6%). The synthesis of the title compounds using microwave irradiation with an objective to reduce reaction time and increases the yield, all the reaction could be completed in very short duration (4-7 min) with considerable increase in the yields (54-81%) by Using microwave irradiation. The newly synthesized compounds were evaluated for anti-inflammatory activity.

Keywords: Pyrazole, Pyrazolones, Anti-inflammatory Activity, More, Microwave Chemistry

Introduction

In the recent years, microwave irradiation reactions have emerged as a new technique in synthesis of organic compound. Important advantages of this technique include highly accelerated rate of the reaction, reduction in reaction time with an improvement in the yield and quality of product. Moreover, the technique is considered as an important approach towards 'green chemistry' because of its eco-friendly nature. synthesis of organic compounds by Conventional methods usually need longer heating time and duration and tedious apparatus set up, results in higher cost of process and the excessive use of chemicals solvents/ reagents leads to environmental pollution.¹

There are wide varieties of heterocyclic compounds that have been explored for developing pharmacologically

important molecules. The pyrazole nucleus has found considerable attention due to outstanding biological activities as antipyretic, analgesic² anti-inflammatory³ antianxiety⁴ as well as its good antibacterial and antifungal properties.⁵ Encouraged by these literature observations, we have synthesized some novel pyrazole substituted derivatives and evaluate their anti-inflammatory activity.

Substituted 1-Benzoyl-3, 5-dimethyl pyrazole (4) was synthesized by treatment of substituted phenyl carbamide (3) and acetyl acetone and substituted 1-Benzoyl-3-methyl pyrazol-5-one (5) was synthesized by the condensation of substituted phenyl carbamide(3) and ethyl acetoacetate. (Scheme-1)

2, 3-dimethyl-1- (substituted phenyl) pyrazol-5-one (8) was synthesized by the reaction of 3-methyl-(1-substituted phe-

