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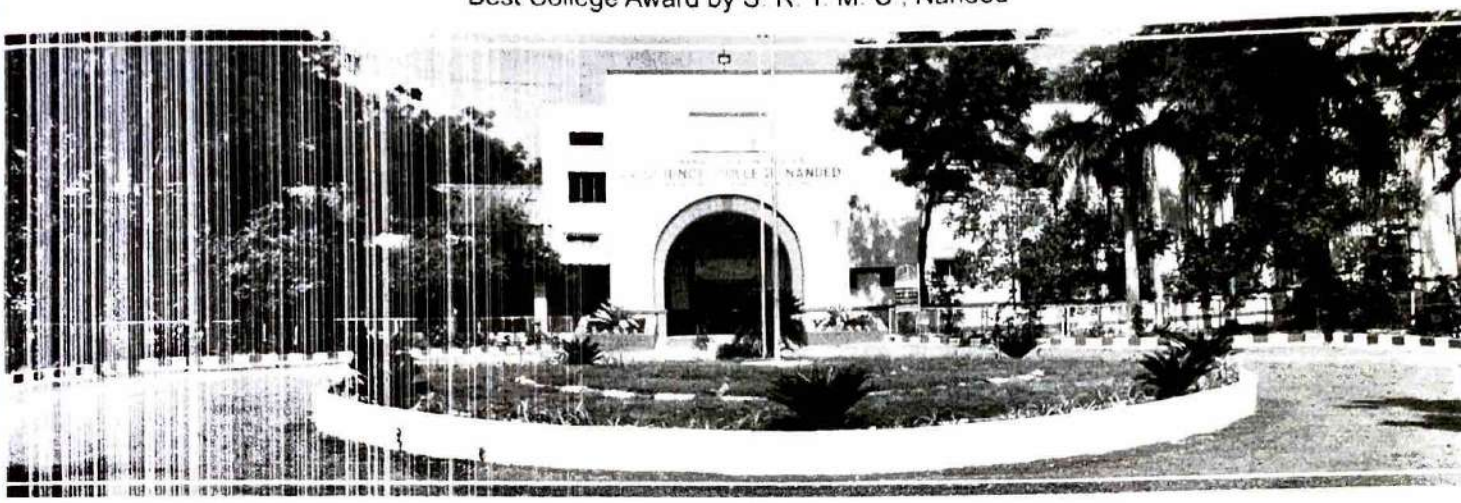

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Synthesis, Characterization and Biological Potential of Some New 4-Fluorochalcones in Water under Ultrasonication

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Abstract:

An environmentally friendly and highly efficient synthesis of a series 4-fluorochalcones (3a-3h) under green chemistry condition was reported from 4-fluorobenzaldehyde and hydroxyl substituted acetophenones by using Ultrasound sonicator. The remarkable advantages of this method are environmentally friendly, short reaction time, simple work-up procedure and good to excellent yields of the products. All the synthesized chalcones were elucidated on the basis of spectral analysis such as IR, ^{1}HNMR, and Mass spectroscopy. These 4-fluorochalcones were evaluated for their in vitro antibacterial and antifungal activity. Majority of the synthesized chalcones were shown the moderate to good antibacterial and antifungal activity against all used strains with higher values.

Keywords: 4-fluorobenzaldehyde, hydroxyl substituted acetophenones, 4-fluorochalcones, sonicator, water, antimicrobial.

Introduction:

Chalcones (α, β-unsaturated ketones) are promising candidates in the new era of medicines on account of their wide spectrum of antitumor, antibacterial, antifungal and anti-inflammatory properties.[1] Chalcones constitute an important group of natural products. Chemically, they consist of open chain flavanoids in which the two aromatic rings are joined by a three carbon α, β-unsaturated carbonyl system[2]. The presence of a reactive α, β unsaturated keto function in chalcones is found to be responsible to inter fare with normal function of the cell membrane of fungi and molds.[3] They are also acts as an intermediates in the biosynthesis of flavanoids, which are substances wide spread in plants and with an array of biological activities[4]

Chalcones present great interest as compounds exhibiting antimalerial[5], anticancer[6], antitrichomonal[7], antileishmanial[8] and cytotoxic activities. While the flavanoids compounds are a group of natural products found in fruits, vegetables, nuts, seeds and flowers as well as in teas and are important constituent of human diet[9]. They have been demonstrated to possess antioxidant[10], antihypertensive[11], anti-allergic[12] and plant growth regulators[13].

The usage of sonicator[14] energy to accelerate organic reactions is of increasing interest and offers several advantages over conventional techniques. In the earlier part of our research work we reported synthesis of nitrogen heterocyclic aldehydes and substituted 2-hydroxyaryl aldehydes by

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