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Original Research Article

Synthesis, characterization and evaluation of anti-inflammatory properties of novel α, β-unsaturated ketones

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Abstract

Purpose: *To prepare and characterize alicyclic aromatic chalcone derivatives, and study their antibiotic and anti-inflammatory properties.*

Methods: *Claisen-Schmidt (aldol condensation) base-catalyzed condensation was used for preparation of chalcone derivatives (compounds I - IV), and the products were characterized using ultraviolet-visible spectroscopy (UV), FT-IR spectroscopy, proton nuclear magnetic resonance (^{1}H-NMR), carbone ^{13}C-NMR and mass spectroscopy (MS). The antibacterial effect of the compounds was determined against Baci. cereus, Staph. Aureus, E. coli, and Pseudomonas Aeruginosa. In addition, their anti-inflammatory effects were assayed using cotton granule-induced granuloma in mice. The results were compared with those for diclofenac, a standard drug. The synthesized derivatives were subjected to theoretical studies on their stabilities, and some chemical parameters were calculated using density function theory [DFT].*

Results: *Using Claisen-Schmidt reaction, it was possible to prepare stable chalcone derivatives, such as derivatives of 2-(3-phenyl acryloyl)cyclopentan-1-one, with good results. Depending on the substituted group, it was also shown that the derivatives had effective biological effects. Compound IV displayed a noticeable antibacterial effect against Staph. aureus and E. coli. The prepared chalcone*