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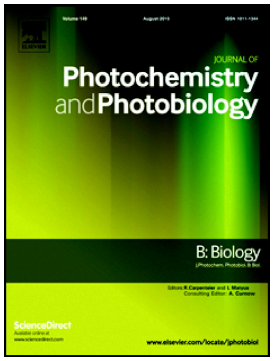

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Green Synthesis, Biological and Spectroscopic Study on the Interaction of Multi-Component Mannich Bases of Imidazo[2,1-*b*]Benzothiazoles With Human Serum Albumin.

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Abstract:

A series of Mannich bases of imidazo[2, l-*b*]benzothiazoles were prepared through one-pot multi-component reaction in the presence of water as an eco-friendly solvent. All the synthesized compounds were confirmed from IR, ^{1}HNMR, ^{13}CNMR, and Mass spectroscopy. Evaluation of *in vitro* anti-inflammatory and anti-microbial activities of all the synthesized derivatives was further accomplished. These results clearly displayed that compound **6d** exhibited outstanding anti-inflammatory activity with a percentage inhibition of 70.23% by membrane stabilization method whereas 67.54% at 100 µg mL^{-1} by the albumin denaturation method, which is comparable to the standard Diclofenac. Further screening against five fungal species (*C. Albicans* ATCC 76615, *C. Mycoderma, C. utilis*, *A. Flavus*, and *B. yeast*) along with four gram positive (Methicillin-resistant S. aureus N315 (MRSA), Staphylococcus aureus ATCC 6538, Bacillus subtilis ATCC 21216, and Micrococcus luteus ATCC 4698), and six Gram-negative bacterial strains (Escherichia coli DH52, Escherichia coli JM109, Salmonella dysenteriae, Pseudomonas aeruginosa ATCC 27853, Bacillus proteus ATCC13315 and Bacillus typhi) was carried out. These findings manifested that compound **7c** displayed excellent antifungal efficacy while compound **7b** revealed significant anti-microbial activity. In addition binding behaviour of compound **7b** was investigated by binding study between calf thymus DNA and compound **7b** by UV-Vis absorption spectroscopy and further research about HSA interactions was carried out.

Keywords: Multi-component, Imidazo[2,1-*b*]benzothiazole, Mannich bases, Anti-inflammatory, Anti-microbial, HSA interaction.