

Synthesis, Characterization and Biological Evaluation of Some Pyrazole Derivatives

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Abstract : This work mainly focused on the synthetic strategies and biological activities associated with pyrazoles. Pyrazole derivatives have been successfully synthesized by simple and facile method and studied for their antibacterial activity. These compounds were prepared from pyrazolic difunctional compounds as starting materials, by reaction with salicylic acid, paracetamol and thiosemicarbazide respectively. Structure of all the prepared compounds confirmation were proved using (FT-IR), (¹H-NMR) and (¹³C-NMR) spectra in addition to melting points. The screening of the antimicrobial activity of the pyrazolic derivatives was examined against different microorganisms in the present study. They were screened for their antimicrobial activities against gram positive bacteria, gram negative bacteria and *Candida albicans*. The synthesized compounds were found to exhibit high antibacterial and antifungal efficiency against several tested bacterial strains, using agar diffusion method and filter paper disc-diffusion method. Ampicillin was used as positive control for all strains except *Candida albicans* for which Nystatin was used. The obtained results reveal that the antibacterial activity of some pyrazolic derivatives is comparable to that observed for the control samples (Ampicillin and Nystatin), suggesting a strong antibacterial activity. The analysis of these results shows that synthesized products react on the surfaces cell walls that are disrupted. When these products are in contact with the bacteria, they damage the membrane, leading to the perturbation of different cellular processes and then leakage of cytoplasm, resulting in the death of the cells. The results will be presented in details. The obtained products constitute effective antibacterial agents and important compounds for biological systems.

Keywords : salicylic acid, antimicrobial activities, antioxidant activity, paracetamol, pyrazole, thiosemicarbazide

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