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Synthesis, characterization, and screening for the antimicrobial activity of 2-(3-(2-cyano-2-(*p*-tolylamino)vinyl)-1*H*-indol-1-yl)-*N*-arylacetamide derivatives

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Herein is described an account of research work that focuses on synthesis of some novel α,β -unsaturated compounds. To afford 2-(3-(2-cyano-2-(*p*-tolylamino)vinyl)-1*H*-indol-1-yl)-*N*-arylacetamide derivatives, Knoevenagel condensation of 2-(3-formyl-1*H*-indol-1-yl)-*N*-arylacetamides and 2-cyano-*N*-(4-methylphenyl) acetamide have been carried out. 2-(3-Formyl-1*H*-indol-1-yl)-*N*-arylacetamides have been easily derived by employing indole-3-carbaldehyde with 2-chloro-*N*-arylacetamides. All the synthesized compounds have been characterized using analytical techniques such as mass spectrometry, Fourier transform infrared (FT-IR) spectroscopy, and nuclear magnetic resonance (NMR) spectroscopy. The biological activity of all the synthesized compounds have been evaluated against a series of bacterial and fungal strains (*Bacillus subtilis*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Escherichia coli*, *Rhizopus oryzae*, and *Aspergillus parasiticus*). Among the synthesized compounds **5e**, **5g** and **5h** demonstrate excellent to moderate antibacterial activity when compared to standard drugs such as ampicillin and streptomycin. Whereas **5e** exhibits antifungal property as compared to standard drug nystatin.

Keywords: Indole-3-carbaldehyde, Knoevenagel condensation, α,β -Unsaturated compounds, Antimicrobial