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Synthesis and Antimicrobial Evaluation of Novel Di-triazoles and 4-Arylidene Amino 4,5 Dihydro-1H-[1,2,4] triazole-5-one Derivatives

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Abstract: A series of novel di-[3(thiophen-2-yl-methyl)-4,5-dihydro-1H- [1,2,4]triazole-5-one-4yl]n-alkanes (2a-h) were obtained by the reaction of N'-1-ethoxy-2-thiophen-2-yl-ethyldene hydrazino carboxylic acid ethyl ester (1) and diamines. Compound 3 was reacted with aldehydes and 4-(arylidene-amino)-3-thiophen-2-yl-methyl-4,5-dihydro-1H-[1,2,4] triazole-5-ones (4, 5, and 8) with Schiff base character were synthesized. (4-(arylidene-amino)-5-oxo-3-thiophen-2-yl-methyl-4,5- dihydro-1H-[1,2,4]triazole-1-yl)-acetic acid ethyl esters (6, 7, and 9) were obtained by the reaction of 4-(arylidene-amino)-3-thiophen-2-yl-methyl-4,5-dihydro-1H-[1,2,4]triazole-5-ones (4, 5, and 8) and ethyl bromoacetate. The structures of the new compounds were inferred through IR, ¹H/¹³C NMR, elemental analyses, and mass spectral data. Compound 8i was characterized by IR, ¹H/¹³C NMR, elemental analyses, mass, and X-ray spectral techniques. Geometry optimization of compounds 2a, 2c, 2f, 4, and 5 was achieved by computer using the AM1 method. Compounds 2f, 4, 5, 6, 7, 8i, and 9k showed good antifungal activity only against yeast fungi, while compound 2d showed antimicrobial activity against the bacteria *Pseudomonas aeruginosa* ATCC10145, *Enterococcus faecalis* ATCC29212 and the yeast fungi *Candida albicans* ATCC 60193 and *Candida tropicalis* ATCC 13803.

Key Words: Triazole-5-one, Schiff base, antimicrobial activity, X-ray

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