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Synthesis and Characterizations of Some New 4H-1,2,4-Triazole Derivatives

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Abstract: 3-[(5-Amino-1,3,4-thiadiazol-2-yl)methyl]-4-ethoxycarbonylamino-5-alkyl-4H-1,2,4-triazoles (2a,b) were obtained from the reaction of 3-cyanomethyl-5-alkyl-4-ethoxycarbonylamino-4H-1,2,4-triazoles (1a,b) with thiosemicarbazide in the presence of trifluoroacetic acid. The treatment of the obtained compounds (2a,b) with acetic anhydride for 1 h afforded 3-[(5-acetylamino-1,3,4-thiadiazol-2-yl)methyl]-4-ethoxycarbonylamino-5-alkyl-4H-1,2,4-triazoles (3a,b). The synthesis of 4-ethoxycarbonylamino-3-[(2,3-dihydro-1,3-benzoxazol-2-yl)methyl]-5-(4-methylbenzyl)-4H-1,2,4-triazole (4) was performed by the treatment of 3-[(5-acetylamino-1,3,4-thiadiazol-2-yl)methyl]-4-ethoxycarbonylamino-5-(4-methylbenzyl)-4H-1,2,4-triazole (3a) with o-aminophenol under nitrogen atmosphere for 50 h. The reaction of compounds 1a,b with salicylaldehyde in the presence of sodium ethoxide yielded 2-{4-[(ethoxycarbonyl)amino]-5-alkyl-4H-1,2,4-triazol-3-yl}-3-(2-hydroxyphenyl)-acrylonitriles (5a,b). The acetylations of compounds 5a,b with acetic anhydride for 5 h resulted in the formation of 2-{4-[acetyl(ethoxycarbonyl)amino]-5-alkyl-4H-1,2,4-triazol-3-yl}-3-[2-(acetyloxy)phenyl]-acrylic acids (6a,b). On the other hand, the treatment of compounds 5a,b with methyl iodide in the presence of NaOH produced 2-{4-[(ethoxycarbonyl) amino]-5-alkyl-4H-1,2,4-triazol-3-yl}-3-(2-methoxyphenyl)acrylic acids (7a,b).

Key Words: 4H-1,2,4-triazole, 1,3,4-thiadiazole, 1,3-benzoxazole, salicyl aldehyde, acetylation, acrylonitrile, acrylic acid

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