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Synthesis and Characterization of New Triheterocyclic Compounds Consisting of 1,2,4-Triazol-3-one, 1,3,4-Thiadiazole and 1,3,4-Oxadiazole Rings

Neslihan DEMİRBAŞ
Karadeniz Technical University, Department of Chemistry,
61080 Trabzon-TURKEY
e-mail: neslihan@ktu.edu.tr

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Authors

Abstract: A series of acetic acid derivatives (2a-c) was synthesized by the condensation of compounds 1a-c with chloroacetic acid. The treatment of carboxylic acid derivatives with thiosemicarbazide in phosphorus oxychloride and subsequent diazotation of the products (3a-c) afforded 5-alkyl-2-[(5-chloro-1,3,4-thiadiazol-2-yl)methyl]- 2,4-dihydro-3H-1,2,4-triazol-3-one derivatives (4a-c). The treatment of compounds 4a-c with thiourea produced 5-alkyl-2-[(5-mercapto-1,3,4- thiadiazol-2-yl)methyl]-2,4-dihydro-3H-1,2,4-triazol-3-one derivatives (5a-c). Subsequently, compounds 5a-c were converted to acid hydrazides by treatment with hydrazine hydrate after esterification (7a-e). Moreover, the reaction of compounds 7a-c with carbon disulfite in the presence of KOH afforded 5-alkyl-2-[(5-\{[(5- mercapto-1,3,4-oxadiazol-2-yl)methyl]thio\}-1,3,4-thiadiazol-2-yl)methyl]- 2,4-dihydro-3H-1,2,4-triazol-3-ones (8a-c).

Key Words: 1,2,4-triazol-3-one 1,3,4-thiadiazole, 1,3,4-oxadiazole, thiosemicarbazide, diazotation, deamination

chem@tubitak.gov.tr

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