DESIGN AND DEVELOPMENT OF 2-PHENYL SUBSTITUTED PYRROLES

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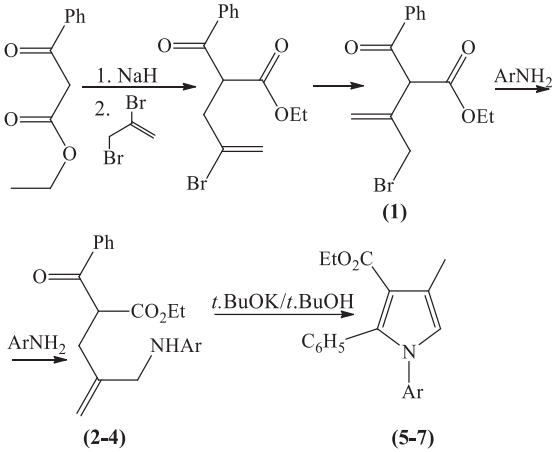
Pyrroles are an essential class of heterocyclic compounds widely studied for their structural diversity and functional versatility. Among them, 2-phenyl four substituted pyrroles have gained significant attention due to their broad range of applications in medicinal chemistry, material science, and catalysis.

There are various approaches in the literature regarding the synthesis of tetra-substituted pyrroles [1, 2]. In the research conducted by Ayhan Demir and co-authors, enaminones of 1,3-dicarbonyl compounds were cyclized in 1,2-dichloroethane solution in the presence of copper(II) acetate ($Cu(OAc)_2$), leading to the formation of the corresponding tetra-substituted pyrroles [1].

Considering the above, the corresponding pyrroles were synthesized by carrying out the reaction of 2-bromoallyl derivatives of alkyl (aryl) series 1,3-dicarbonyl compounds in a super-basic medium [3].



Ar= C_6H_5 (5), C_6H_5 -CH_2 (6), C_6H_5 (CH_3)CH (7)

As seen from the reaction scheme above, the synthesis process proceeds in three stages. First, the regioselective alkylation of ethyl 3-oxo-3-phenylpropanoate with 2,3-dibromopropene results in the formation of ethyl 2-benzoyl-3-(bromomethyl)but-3-enoate (1).

The molecular structures of the synthesized compounds were elucidated and confirmed using IR and ^{13}C və ^{1}H NMR spectroscopy techniques.

1. S.A. Demir, A. Aybey, M. Kayalar, *Arkivoc*, 2005. 2005(15), 105-116.
2. S.A. Demir, İ.M. Akhmedov, Ö.Sesenoglu, *Tetrahedron*, 2002, 58(49), 9793-9799.
3. Akhmedof, I.M., Kurbanova, M.M., Safarova, [et. al.], 3rd International Turkic World Conference on Chemical Sciences and Technologies – Baku: 10 – 13 September, 2017, 157.