THE DIASTEREOSELECTIVE SYNTHESIS OF THE POLYCYCLIC DERIVATIVES OF 4,5-DIHYDROXYIMIDAZOLIDIN-2-ONE

Shtamburg V.G[1], Shtamburg V.V[1], Kravchenko S.V.[2], Anishchenko A.A.[3], Mazepa A.V.[4]

[1]Ukrainian State Chemical Technology University, Dnipro, Ukraine

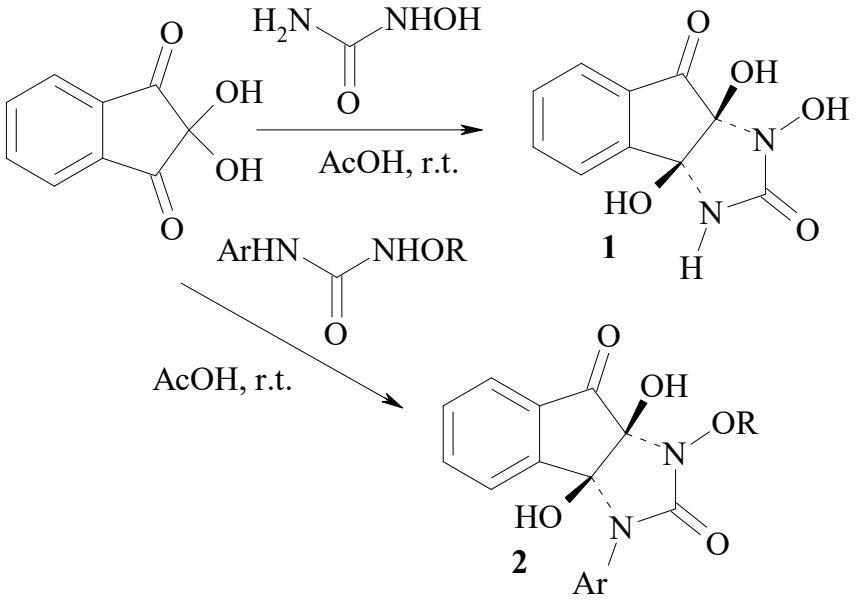
[2]Dnipro State Agrarian and Ecomomic University, Dnipro, Ukraine

[3]Oles Honchar Dnipro National University, Dnipro, Ukraine

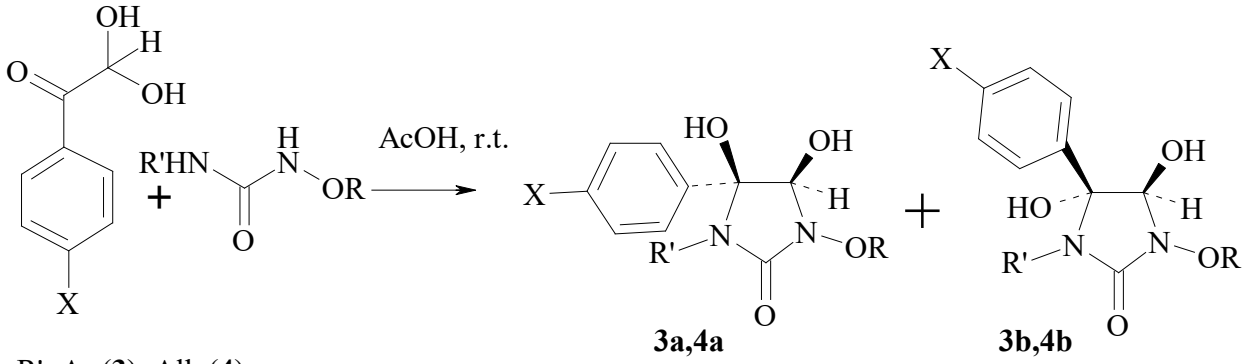
[4]A.V. Bogatsky Physico-Chemical Institute of NAS of Ukraine, Odesa, Ukraine

svtailor@ukr.net

The ninhydrin interaction with *N*-hydroxyurea and *N*-alkoxy-*N'*-arylureas in acetic acid at 16–20 °C gives only one of the possible diastereomers of 1,3a,8a-trihydroxy-1,3,3a,8a-tetrahydroindeno[1,2-*d*]imidazole-2,8-dione **1** and 1-alkoxy-3-alkyl-3a,8a-dihydroxy-1,3,3a,8a-tetrahydroindeno[1,2-*d*]imidazole-2,8-diones **2**, respectively. The XRD study of diastereomers **1**,**2** has shown that the C(3a)–OH and C(8a)–OH hydroxyl groups are *cis*-oriented to each other [1].



The arylglyoxals reacts with *N*-alkoxy-*N'*-arylureas and *N*-alkoxy-*N'*-alkylureas in the same conditions mainly yielding-3-alkoxy-1-aryl-4*S*,5*S*-dihydroxy-5-(4-nitrophenyl)imidazolidin-2-ones **3a** and 3-alkoxy-1-alkyl-4*S*,5*S*-dihydroxy-5-(4-nitrophenyl)imidazolidin-2-ones **4a**, respectively. The compounds **3a**, **4a** have 4-hydroxyl and 5-hydroxyl groups in the *cis*-conformation to each other. The *trans*-4,5-dihydroxydiastereomers **3b**, **4b** were observed in the products in the trace amounts [2,3].



R'=Ar (**3**), Alk (**4**)
R = Alk
X = NO_2, CO_2H, H

The structure of the compounds **3a**, **4a** was confirmed by the XRD study [2].

References:

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2. Shtamburg V.G., Shtamburg V.V., Shishkina S.V., Mazepa A.V.; Konovalova I.S. 3-Alkoxy-1,5-diaryl-4,5-dihydroxyimidazolidin-2-ones and 3-Alkoxy-1-alkyl-5-aryl-4,5-dihydroxyimidazolidin-2-ones: Synthesis and Structure// Eur. Chem. Bull. – 2019. – V. 8, No 9. – P. 282–290.

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