REACTION OF PYRIDYLIMINES OF AROMATIC ALDEHYDES WITH UNSATURATED ETHERS

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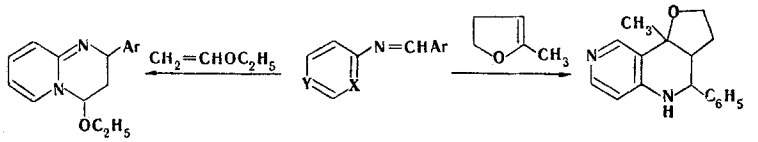
We have found that pyridylimines (I, III) of aromatic aldehydes undergo cycloaddition with vinyl alkyl ethers and α-methyldihydrofuran in benzene at room temperature (3 h) in the presence of acetic acid as the catalyst. Pyrido[1,2-a]pyrimidine derivatives (II) are formed in the reaction of 2-pyridylimines I with vinyl ethyl ether, while 1,6-naphthyridine derivative IV is formed in the reaction of benzaldehyde 4-pyridylimine (III) with α-methyldihydrofuran.



II I, III IV

I X=N, Y=CH; I, II a Ar=C_6H_5; b Ar=C_6H_4OH-*o*; III X=CH, Y=N, Ar=C_6H_5

Compound IIa, with bp 203-204°C (3 mm) and mp 147-149°C (from ethyl acetate), was obtained in 35% yield. The hydrochloride had mp 210-212 °C (from alcohol–ethyl acetate). The IR spectrum did not contain a band at 3200 cm^{-1} (NH). PMR spectrum (in $CDCl_3$): 1.31 (t, 4-CH_3), 1.5-2.2 (m, 3-H), 3.4-3.8 (q, 4-CH_2), 4.48-4.81 (m, 2-H and 4-H), 5.45-5.78 (m, 7-H), 6.45-6.85 (m, 5-H, 6-H, and 8-H), and 7.12-7.60 ppm (m, Ar). Compound IIb, with mp 68-69°C (from alcohol), was obtained in 43% yield. Compound IV, with mp 173-175°C (from ethyl acetate), was obtained in 33% yield. IR spectrum: 3216 cm^{-1} (NH). PMR spectrum (in $CDCl_3$): 1.85 (s, 1a-CH_3), 2.20-2.75 (m, 3-H), 4.18 (t, 2-H), 5.16-5.40 (q, 3a-H and 4-H), 6.38-6.46 (m, 6-H), 7.14-7.25 (m, Ph), and 8.01-8.15 ppm (m, 7-H and 9-H). The results of elementary analysis of the compounds obtained for their C, H, and N content are in agreement with the calculated values. The compounds obtained are chromatographically homogeneous and were found to be one of the possible isomers in each case; however, it is not possible to make assignments on the basis of the PMR spectra. The stereospecificity of the reactions can be explained by their occurrence via the scheme of the diene synthesis [1].

LITERATURE CITED

1. L. S. Povarov, Usp. Khim., 36, 1533 (1967).

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