

**1-ACYL-1-NITRO-2-THIENYL(FURYL)ETHENES:
METHODS OF THEIR FORMATION AND STRUCTURE**

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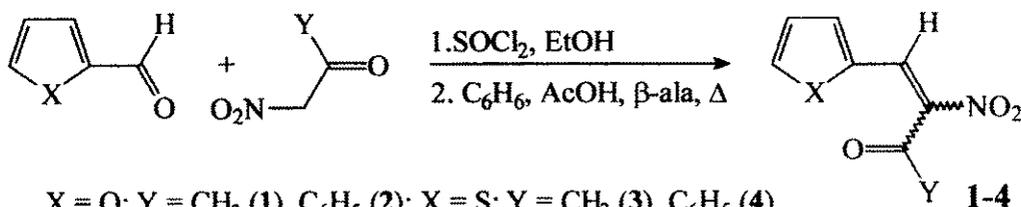
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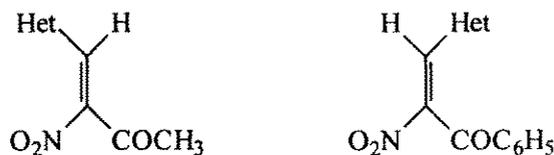
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In the range of furan and thiophen derivatives there are lots of compounds with a high pharmacological activity such as furacylin, furazolidon, furazonal, benzamon, ketotiphen, pyrantel and others. 1-Acyl-1-nitro-2-thienyl(furyl)ethenes which have two strong acceptors – nitro- and carbonyl groups – at double bond at the same time can be suggested as convenient reagents for the synthesis of perspective furan- and thiophencontaining compounds. We have worked out a convenient one-stage method of the synthesis of heterylnitroethenes (1-4) based on the condensation of furfural and thiophen-2-aldehyde with acetyl(benzoyl)nitromethan with the presence of acid catalysts.



The complex analysis of NMR ¹H, UV, IR spectroscopy data and dipole moments of the synthesized 1-acyl-1-nitro-2-thienyl(furyl)ethenes (1-4) has let us to make a conclusion on the specificity of their structure. By comparison of chemical shifts of olefine proton in NMR ¹H spectra with corresponding values of model compounds it has been established that in *d*-chlorophorm gem-acetylnitroethenes (1,3) have *Z*-, gem-benzoylnitroethenes (2,4) *E*-configuration and for the first the preference of isomeric form depends on the solvent.



Z-form

E-form

The long wave absorption bands in UV spectra [for acetylcontaining compounds (1,3) λ_{\max} 325-330 nm, ϵ 11400-15000, for benzoyl analogs (2,4) λ_{\max} 361-364 nm, ϵ 16700-19000, solvent CH₃CN] and high values of dipole moments [in benzene at 25°C μ_{exp} of compounds (1-4) are 5.02, 5.28, 4.67 and 6.20 D accordingly] are evidence of high polarization of molecules of examined systems.

In the report configuration transformations of heterylnitroethenes (1-4) are being analyzed, the preferable conformations are being discussed.