# A NEW REACTION IN THE SERIES OF 4,5,5-TRIMETHYL-$\Delta^3$-BUTENOLIDES

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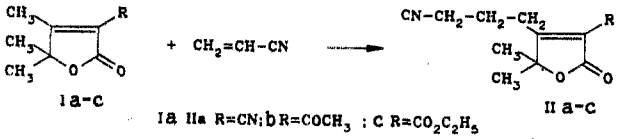
We found that the cyanethylation of the methyl group at the double bond takes place in the reaction of 3-substituted 4,5,5-trimethyl-$\Delta^3$-butenolides (I) [1, 2] with an equimolar amount of acrylonitrile in the presence of sodium methoxide with the formation of the corresponding 4-($\gamma$-cyanopropyl)-5,5-dimethyl-$\Delta^3$-butenolides in a yield of 85-90%. The reaction proceeds at a temperature of 50-60°C in the course of 2 h.




Ia-c IIa-c

Ia IIa R=CN; b R=$COCH_3$; c R=$CO_2C_2H_5$

This reaction is evidently a particular case of the Michael condensation by analogy with the dimerization of piperitone [3].

Compound IIa has mp 174-175°C. The IR spectrum is as follows: 1760 (C=O) lactone), 2250 (C≡N), and 1640 $cm^{-1}$ (C=C). Compound (IIb) has mp 135-136°C. The IR spectrum is as follows: 1758 (C=O lactone), 1640 (C=C), and 1720 $cm^{-1}$ ($COCH_3$). Compound (IIc) has mp 143-144°C. The IR spectrum is as follows: 1760 (C=O lactone), 1640 (C=C), and 1730 $cm^{-1}$ ($CO_2$-$C_2H_5$).

The compounds IIb and IIc were identified in the form of the 2,4-dinitrophenylhydrazones and the phenylhydrazide correspondingly.

The signals of the methylene groups of the $(CH_2)_3CN$ fragment are observable in the region of 2-3 ppm in the PMR spectra of compounds IIa and IIb.

The data of the elemental analysis correspond with the calculated data.

## LITERATURE CITED

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