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## Michael reaction of levoglucosenone and α-bromolevoglucosenone with nitroalkanes

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## Abstract

The nitromethane is reacted with levoglucosenone and depending on the ratio of the interacting of reactants gives of "2:1" and "1:2" adducts. Reactions of levoglucosenone with nitromethane homologues are not known. Previously, we have studied the reaction of Michael levoglucosenone and his  $\alpha$ -bromo and -iod derivatives with  $\alpha, \omega$ -dinitrocompounds in terms of chemical and electrochemical generation base.

In the continuation of this work we have studied the reaction to mononitrocompounds with levoglucosenone and  $\alpha$ -halide derivatives in toluene, under the action of K<sub>2</sub>CO<sub>3</sub> in the presence of tetrabutylammonium hydroxide.

The reaction a-bromo derivative of levoglucosenone with mononitrocompounds regardless of temperature, duration of action or ultrasound is accompanied by polymerization of reaction of mixture.

We have shown that reaction of cyclopentaanelation is peculiar for cyclic of  $\alpha$ -haloenones. To determine the possibilities of this transformation in the reaction involved of linear of 3-bromo-3-buten-2one obtained analogously to the synthesis of  $\alpha$ -bromlevoglucosenone. The reaction was conducted in toluene under ultrasound, resulting in isolated 3-acetyl-4-nitro-5,5-dimethylcyclopentyl-1-ene (1). In contrast to cyclic a-haloenone, the reaction was complete after 5 minutes to form only one compound cyclopentene 1 which succeeded in isolating with yield of 20%. Small yields are explained by the high volatility of cyclopentene 1.

Thus developed the conditions of interaction of levoglucosenone with 1-, 2-nitropropanes and nitro-*n*-hexane in toluene under the action K<sub>2</sub>CO<sub>3</sub> in the presence the tetrabutylammonium hydroxide; the reaction 3-bromo-3buten-2-one and  $\alpha$ -bromolevoglucosenone with 2,2-dimethyl-1,3-dinitropropane and 5,5-dimethyl-4,6-dinitrocaproic acid leads to the formation 3-acetyl-4-nitro-5,5-dimethylsyclopent-1-en and methyl 3-[(1S,2R,3S,8R)-4,4dimethyl-3-nitro-7-oxo-9,11-dioxotricylo-[6.2.1.0<sup>2,6</sup>]-yndec-5-en-5-il]propionate.

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