USEFUL MODIFICATION OF THE CYCLOPROPANYLATION OF α,β-UNSATURATED KETONES WITH ETHYL DIMETHYLSULFURANYLIDENEACETATE

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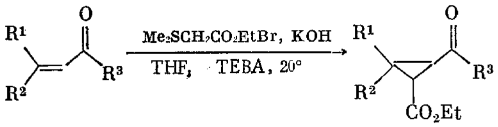
UDC 542.97 : 547.512 :
547.384

We have found that the cyclopropanylation of α,β-unsaturated ketones by the action of ethyl dimethylsulfuranylideneacetate proceeds in high yields when the ketone reacts with the sulfonium salts $Me_2\overset{+}{S}CH_2CO_2 \cdot EtBr^-$ in the presence of 85% KOH and a phase-transfer catalyst, triethylbenzylammonium (TEBA), in THF at ~20°C. In the absence of a phase-transfer catalyst or in the presence of anhydrous KOH there is practically no reaction. Cyclopropanylation by the individual ylide occurs only at high temperature and is accompanied by side reactions [1].



When $R^1 = R^2 = R^3 = Me$, the yield is 73%; when $R^1 = Ph$, $R^2 = H$, and $R^3 = Me$, 77%; when $R^1 = R^3 = Ph$ and $R^2 = H$, 89%; when $R^1 = \alpha$-furyl, $R^2 = H$, $R^3 = Me$, 93%; when $R^1 = \alpha$-furyl, $R^2 = H$, and $R^3 = Ph$, 96%.

Typical reaction conditions: A mixture of 0.01 mole of enone, 0.01 mole of $Me_2\overset{+}{S}CH_2CO_2EtBr^-$, 0.01 mole of pulverized 85% KOH, and 0.01 g of TEBA in 20 ml of THF were mixed for 1-2 h at 20°C. The mixture was filtered, the solvent was distilled off, and the residue was distilled in vacuum.

LITERATURE CITED

1. Y. B. Payne, J. Org. Chem., 32, 3251 (1967).

Institute of Chemistry, Bashkir Branch, Academy of Sciences of the USSR, Ufa. Translated from Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No. 5, p. 1210, May, 1983. Original article submitted December 27, 1982.