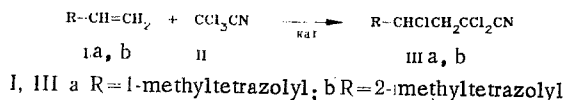


ADDITION OF TRICHLOROACETONITRILE TO VINYL TETRAZOLES

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UDC 547.464.4'796.1

The reaction of vinyltetrazoles with trichloroacetonitrile has not yet been described. We found that 5-vinyl-substituted 1- and 2-methyltetrazoles (Ia, b) smoothly react with trichloroacetonitrile (II) in the presence of copper-containing catalysts to form 2,2,4-trichloro-4-tetrazolylbutyronitriles



The reactions were carried out by heating mixtures of the components in the ratio of I to II from 1:1.5 to 1:5 at 80-90°C for 2 h in sealed ampuls. Cuprous chloride or metallic copper in an amount of 5-10 mole % was used as catalyst. At the end of the reaction, excess of nitrile II was removed *in vacuo*. The residue was treated with absolute ether, filtered, and the ether was evaporated. The crystals that separated were crystallized from ethanol.

2,2,4-Trichloro-4-(1-methyltetrazolyl)butyronitrile (IIIa). Yield 86%, mp 75°C. PMR spectrum,  $\delta$ : 3.72 (2H, m, CH<sub>2</sub>), 4.17 (3H, s, CH<sub>3</sub>), 5.43 ppm (1H, m, CH).

2,2,4-Trichloro-4-(2-methyltetrazolyl)butyronitrile (IIIb). Yield 94%, mp 82°C. PMR spectrum,  $\delta$ : 3.44 (2H, m, CH<sub>2</sub>), 4.30 (3H, s, CH<sub>3</sub>), 5.42 ppm (1H, m, CH).

The compounds obtained have satisfactory analytical characteristics.

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