OXIDATION OF 4-H-SELENOPYRANS

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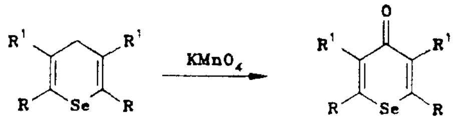
For the first time, we established that 4H-selenopyrans can be oxidized readily by potassium permanganate in acetone or acetonitrile to γ-selenopyrones with preparative yields. Considering the availability of the 4H-selenopyrans [1], their ability to be oxidized is very promising for the isolation of dyes and other compounds with valuable properties. The method is more simple and more universal by comparison with the known method of the isolation of 4H-selenopyrones based on substituted diethynylketones, since it allows the isolation of γ-selenopyrones with different substituents in the β-position of the heterocycle [2, 3].



I–III IV–VI

I, IV R=Ph, R^1=H; II, V R=Ph; R^1=Me; III, VI R—R′=

Thus, for example, to the solution of 1 g (32 mmoles) of 3,5-dimethyl-2,6-diphenyl-4H-selenopyran (II) in acetone are added 2.5 g (16 mmoles) of potassium permanganate, and the mixture is heated until the disappearance of the initial 4H-selenopyran is achieved (TLC). The reaction mixture is then filtered and concentrated. The yield of the 3,5-dimethyl-2,6-diphenyl-γ-selenopyrone (V) is 0.7 g (62%); it has the mp 141-143°C. The IR spectrum taken in hexachlorobutadiene and mineral oil is as follows: 1610 (C=O), 1485 and 1430 cm^{-1}. The PR spectrum (80 MHz, $CDCl_3$) is characterized at the δ values 2.1 ppm (CH_3, s, 6H) and 7.4 ppm (Ph, m, 10H).

The solvents for the oxidation in regard to compounds (IV) and (VI) are acetonitrile and acetone, respectively.

Compound (IV). The mp is 145-147°C. The PMR spectrum (80 MHz, $CDCl_3$) is characterized at the δ values 7.13 ppm (β-H, s, 2H) and 7.49 ppm (Ph, m, 10H). The yield is 45%.

Compound (VI). mp 152-154°C. The PMR spectrum (80 MHz, $CDCl_3$) is characterized at the δ values 2.92 ppm (CH_2, m, 8H), 7.45 ppm (arom., m, 4H), and 8.47 ppm (arom., m, 4H). Yield 65%.

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