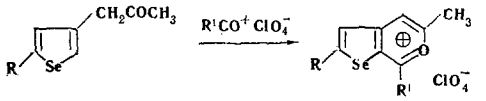
NEW AROMATIC SYSTEMS – THE SELENOPHENO[2,3-c]PYRYLIUM CATION

V. I. Dulenko and N. N. Alekseev

UDC 547.739.3'814

In developing our research on the synthesis of selenophene derivatives of pyrylium cations [1], we have obtained for the first time selenopheno[2,3-c]pyrylium salts by the acylation of 3-acetonyl derivatives of selenophene with carboxylic acid anhydrides in the presence of equimolecular amounts of perchloric acid.



R = H, Alk; R' = Alk

Like thieno[2,3-c]pyrylium salts [2], the selenopheno[2,3-c]pyrylium salts are isolated in good yields (up to 90%) as stable, crystalline perchlorates. The presence of the pyrylium ring in the synthesized compounds was confirmed by means of IR spectroscopy. The intense band at 1630-1635 cm^{-1} is affiliated with the symmetrical valence vibrations of the pyrylium cation [3].

The selenopheno[2,3-c]pyrylium salts are a new, previously undescribed heteroaromatic system. Ammonia readily converts them to the corresponding selenopheno[2,3-c]pyridines in good yields. The salts apparently are also inclined to undergo other transformations characteristic for pyrylium salts [4, 6].

EXPERIMENTAL

2,5,7-Trimethylselenopheno[2,3-c]pyrylium Perchlorate. This compound was obtained in 83% yield and had mp 172-173°C (from alcohol). Found: C 37.0; H 3.5; Cl 11.0; Se 24.1%. $C_{10}H_{11}ClO_5Se$. Calculated: C 36.9; H 3.4; Cl 10.9; Se 24.3%.

5,7-Dimethylselenopheno[2,3-c]pyrylium Perchlorate. This compound was obtained in 77% yield and had mp 176-177° (from glacial acetic acid). Found: C 34.9; H 3.0; Cl 11.5; Se 25.3%. $C_9H_9ClO_5Se$. Calculated: C 34.7; H 2.9; Cl 11.4; Se 25.4%.

2,5,7-Trimethylselenopheno[2,3-c]pyridine. This compound was obtained in 75% yield. The picrate had mp 208-209° (from alcohol). Found: N 12.5%. $C_{10}H_{11}NSe \cdot C_6H_3N_3O_7$. Calculated: N 12.4%. The hydrochloride melted above 300° (from acetone). Found: N 5.5%. $C_{10}H_{11}NSe \cdot HCl$. Calculated: N 5.4%.

5,7-Dimethylselenopheno[2,3-c]pyridine. This compound was obtained in 77% yield and had mp 42° (from hexane). Found: N 6.8%. C_9H_9NSe. Calculated: N 6.7%. The picrate had mp 162-163° (from alcohol). Found: N 12.6%. $C_9H_9NSe \cdot C_6H_3N_3O_7$. Calculated: N 12.7%. The hydrochloride had mp 318-320° (from acetone). Found: N 5.6%. $C_9H_9NSe \cdot HCl$. Calculated: N 5.7%.

LITERATURE CITED

1. V. I. Dulenko, N. N. Alekseev, and S. N. Baranov, Khim. Geterotsikl. Soedin., 997 (1971).
2. L. V. Dulenko, G. N. Dorofeenko, S. N. Baranov, N. G. Katts, and V. I. Dulenko, Khim. Geterotsikl. Soedin., 320 (1971).

Donetsk Physical-Organic Chemistry Branch, Institute of Physical Chemistry, Academy of Sciences of the Ukrainian SSR. Translated from Khimiya Geterotsiklicheskikh Soedinenii, No. 2, pp. 282-283, February, 1972. Original article submitted May 18, 1971.

3. A. T. Balaban, G. D. Matescu, and M. Elian, Tetrahedron, 18, 1083 (1962).
4. K. Dimroth, Angew. Chem., 72, 331 (1960).
5. Yu. I. Chumakov (editor), Heterocycles in Organic Synthesis [in Russian], Kiev (1970), p. 108.
6. V. I. Dulenko, S. N. Baranov, G. N. Dorofeenko, I. G. Katts, and L. V. Dulenko, Dokl. Akad. Nauk SSSR, 195, 607 (1970).