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SHORT COMMUNICATIONS

Reaction of Divinyl Sulfide with Selenourea

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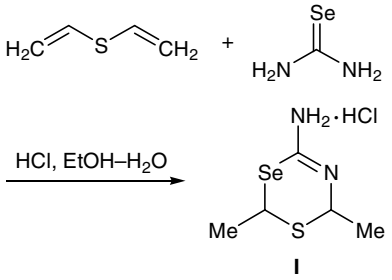
Divinyl sulfide is a versatile intermediate product in modern organic synthesis [1–4], which is used to obtain various heterocyclic compounds [2–4]. Divinyl sulfide is known to react with thiourea and its derivatives in the presence of strong acids to produce 4-amino-2,6-dimethyl-2*H*,6*H*-1,3,5-dithiazinium salts [5–9]. There are no published data on reaction of divinyl sulfide with selenourea.

We have found that divinyl sulfide reacts with selenourea in the presence of hydrochloric acid, yielding 90% of previously unknown heterocyclic compound, 2,6-dimethyl-2*H*,6*H*-1,3,5-thiaselenazin-4-amine hydrochloride (**I**). The reaction occurs in aqueous ethanol at 50°C. The structure of compound **I** was proved by the ^{1}H, ^{13}C, and ^{77}Se NMR and IR spectra and elemental analysis. The product is an approximately equimolar mixture of *cis* and *trans* isomers.



I

2,6-Dimethyl-2*H*,6*H*-1,3,5-thiaselenazin-4-amine hydrochloride (I). mp 113–114°C. IR spectrum (KBr), ν, cm^{-1}: 670, 770, 960, 995, 1150, 1300, 1345, 1375, 1430, 1470, 1590, 1620, 3050, 3190, 3400. ^{1}H NMR spectrum ($CDCl_3$), δ, ppm: *cis* isomer: 1.53 d (6-CH_3), 1.56 d (2-CH_3), 4.95 q (6-H), 5.20 q (2-H), 11.40 s (NH_2); *trans* isomer: 1.70 d (6-CH_3), 1.89 d (2-CH_3), 4.97 q (2-H), 5.27 q (6-H), 9.44 s (NH_2). ^{13}C NMR spectrum ($CDCl_3$), δ_C, ppm: *cis* isomer: 19.58, 20.06, 36.48, 51.40, 169.80; *trans* isomer: 20.63, 26.41, 39.90, 57.08, 169.72. ^{77}Se NMR spectrum ($CDCl_3$), δ_{Se}, ppm: 470. Found, %: C 24.10; H 4.52; Cl 14.61; N 11.11; S 13.39; Se 32.42. $C_5H_{11}ClN_2SSe$. Calculated, %: C 24.45; H 4.51; Cl 14.45; N 11.40; S 13.03; Se 32.16.

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