ISSN 1070-3632, Russian Journal of General Chemistry, 2011, Vol. 81, No. 11, pp. 2383–2384. © Pleiades Publishing, Ltd., 2011. Original Russian Text © V.D. Dyachenko, I.E. Dyachenko, 2011, published in Zhurnal Obshchei Khimii, 2011, Vol. 81, No. 11, p. 1931.

#### LETTERS TO THE EDITOR

# Unusual Reaction of 1,2-Dihydro-5,6-tetramethylenespiro{cyclohexane-2-thieno-[2,3-d]pyrimidine-4(3H)-thione} with 2-Bromo-4'-methylacetophenone

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Received February 15, 2011

### **DOI:** 10.1134/S1070363211110326

1,2-Dihydro-5,6-tetramethylenespiro{cyclohexane-2-thieno[2,3-*d*]pyrimidine-4(3*H*)-thione} I was alkylated with ethyl iodide [1] and  $\alpha$ -chloroacetanilide [2] in DMF solution in the presence of KOH involving the sulfur atom of thioxo-group to give the corresponding thioethers. The use of 2-bromo4'-methylacetophenone II in this reaction as the alkylating agent led unexpectedly to the cross-recyclization of the pyrimidine fragment of the heterocyclic system I and to the formation of 2-(2-hydroxy-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-4-(4-methylphenyl)thiazole III.



The mechanism of this reaction and the limits of its applicability are studied.

**2-(2-Hydroxy-4,5,6,7-tetrahydrobenzo[***b***]thiophen-3-yl)-4-(4-methylphenyl)thiazole (III).** To a stirred solution of 2.93 g (10 mmol) of compound I in 15 ml of DMF was consequently added 5.6 ml (10 mmol) of 10% aqueous solution of KOH and 2.13 g (10 mmol) of α-bromoketone II. The mixture was stirred for 4 h and diluted with an equal volume of water. The resulting precipitate was filtered off, washed with water, ethanol and hexane. Yield 2.42 g (74%), yellow powder, mp 190–192°C (AcOH). IR spectrum, v, cm<sup>-1</sup>: 3332 (OH). <sup>1</sup>H NMR spectrum, δ, ppm: 1.67–1.88 m (4H, 2CH<sub>2</sub>), 2.38 s (3H, Me), 2.57 m (2H, CH<sub>2</sub>), 2.75 m (2H, CH<sub>2</sub>), 7.21 d and 7.78 d

(4H, C<sub>6</sub>H<sub>4</sub>, J 8.1 Hz), 7.43 s (1H, C<sup>5</sup>H<sub>thiazole</sub>). The signal of OH proton does not appears due to the rapid deuterium exchange. Mass spectrum, m/z ( $I_{rel}$ , %): 239 (2)  $[M + 2]^+$ , 328 (12)  $[M + 1]^+$ , 327 (27)  $[M]^+$ , 326 (100)  $[M - 1]^+$ , 325 (19)  $[M - 1]^+$ , 298 (20), 265 (13), 163 (19), 147 (25), 134 (16), 115 (15), 105 (10), 91 (12)  $[C_6H_4Me]^+$ , 77 (8)  $[Ph]^+$ , 65 (7), 45 (9)  $[CHS]^+$ , 40 (14). Found, %: C 65.89; H 5.12; N 4.15. C<sub>18</sub>H<sub>17</sub>NOS<sub>2</sub>. Calculated, %: C 66.02; H 5.23; N 4.28.

The IR spectrum was registered on a IKS-40 spectrophotometer from the sample in vaseline oil. The <sup>1</sup>H NMR spectrum was recorded on a Gemini-200 spectrometer (199.975 MHz) in DMSO- $d_6$  with internal TMS. The mass spectrum was taken on a

Kratos MS-890 spectrometer (70 eV) using direct input of the sample into the ion source. The melting point was determined on a Kofler heating bench. The reaction progress was monitored by the TLC method on Silufol UV-254 plates eluting with acetone–hexane mixture (3:5) and detecting with iodine vapor and UV irradiation.

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