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We used cleavage of the disulfide bond in o-formylhetaryl disulfides under the influence of nucleophilic reagents for the synthesis of isothiazole-containing heteroaromatic systems (I). The readily accessible disulfides (IIa,b,c,d), which were obtained by oxidation of the corresponding mercapto aldehydes with hydrogen peroxide, were subjected to reaction with ammonia at room temperature in methanol. The solvent was removed by distillation, and the products were separated by column chromatography on L $5/40\mu$ silica gel (elution with chloroform).

Condensed systems Ia-d and aminomethylene derivatives of thiones IIIa-d are formed in approximately equal ratios in almost quantitative yields.



I-III a $X = NC_6H_5$, Y = N, $R = CH_3$; b $X = NCH_3$, $Y = CC_6H_5$, R = H; c X = 0, $Y = CC_6H_5$, R = H;

$d x=s, y=cc_6H_5, R=H$

Annelation of the isothiazole ring evidently takes place through a step involving cyclization of the sulfenamide formed as a result of nucleophilic attack on the disulfide bond by ammonia and its subsequent cleavage.

The constants of all of the substances obtained are in agreement with the literature data. The following compounds were obtained [compound, melting point in degrees Centigrade, λ_{max} (log ε), and yield in percent given]: Ia, 64, 237 (4.25), 275 (4.17), 43; Ib, 95, 245 (4.29), 275 (4.08), 48; Ic 107-108, 218 (4.31), 287 (4.40), 47; Id, 160-161, 245 (4.35), 290 (4.22), 40; IIIa, 190-191, 308, 415, 46; IIIb, 120-121 (dec.), 258 (3.76), 380 (3.19), 42; IIIc, 191-192, 228 (3.48), 268 (3.80), 315 (3.59), 380 (3.57); 41; IIId, 178, 235 (4.14), 320 (4.21), 409 (4.03), 45.

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