SYNTHESIS OF 2-AMINO-5-(3,5,6-TRICHLORO-1,4-BENZOQUINONE-2-YL)THIAZOLES

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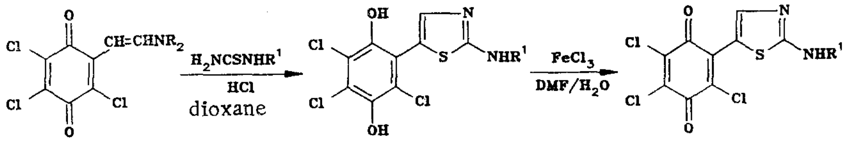
We present an original two-step synthesis of compounds that contain electron donor (aminothiazole) and electron acceptor (trichlorobenzoquinone) residues; these are of interest in the study of inter- and intramolecular charge transfer.

We determined for the first time that when equimolar amounts of 2-(2-dialkylaminovinyl)-3,5,6-trichloro-1,4-benzoquinones (Ia,b) [1] and thiourea or N-monosubstituted thiourea are heated in dioxane in the presence of hydrochloric acid, the aminothiazole ring closes to form 2-amino-5-(2,5-dihydroxy-3,4,6-trichlorophenyl)thiazoles (IIa-e). Oxidation of the latter with ferric chloride in aqueous DMFA at room temperature gives the quinones IIIa-e.



I a,b II a-e III a-e

I a R=CH_3; b R=C_2H_5; II, III a R^1=H; b R^1=CH_3; c R^1=C_6H_5; d R^1=$CH_2CH=CH_2$; e R^1=$COCH_3$

Each step of the synthesis takes 2 h, and the yield of III (calculated on I) is 40-60%. The compounds are intensely colored (IIIa-d, blue; IIIe, violet), poorly soluble in orgnic solvents (except DMFA, DMSO, HMTP), and decompose when heated above 250°.

The structure of III was confirmed by the IR and UV spectra. IR spectrum (in Nujol), ν: 1683-1653 (quinone C=O), 1645-1620 (thiazole ring), 1548-1532 (C=C), 3400-3200 cm^{-1} (N-H). UV spectrum of IIIa (in ethanol), λ_{max} (log ε): 318 (4.14), 597 nm (3.67). Elemental composition data of the compounds were satisfactory.

LITERATURE CITED

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