Synthesis and Reactivity of 2-(Thiophen-2-yl)[1,3]thiazolo[4,5-*f*]quinoline

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Abstract—The condensation of quinolin-5-amine with thiophene-2-carbonyl chloride in propan-2-ol gave *N*-(quinolin-5-yl)thiophene-2-carboxamide. Treatment of the latter with excess diphosphorus pentasulfide in anhydrous pyridine afforded the corresponding thioamide which was oxidized with potassium hexacyanoferrate(III) in alkaline medium to obtain 2-(thiophen-2-yl)[1,3]thiazolo[4,5-*f*]quinoline. The oxidation product was subjected to electrophilic substitution reactions, in particular nitration, sulfonation, bromination, formylation, and acylation, which led to the formation of the corresponding derivatives substituted exclusively at the 5-position of the thiophene ring. Acylation of 2-(thiophen-2-yl)[1,3]thiazolo[4,5-*f*]quinoline with acetic anhydride produced a mixture of acetyl and acetoacetyl derivatives.

Keywords: quinoline-5-amine, *N*-(quinolin-5-yl)thiophene-2-carboxamide, *N*-(quinolin-5-yl)thiophene-2-carbothioamide, oxidation, potassium hexacyanoferrate(III), electrophilic substitution.

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