Synthesis, reactions, and antioxidant activity of 3-(pyrrol-1-yl)-4,6-dimethyl selenolo[2,3-b]pyridine derivatives

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Abstract:

Ethyl 4,6-dimethyl-3-(pyrrol-1-yl) selenolo[2,3-b]pyridine-2-carboxylate (2) was synthesized by the reaction of previously prepared ethyl 3-amino-4,6-dimethyl selenolo[2,3-b]pyridine-2-carboxylate (1) with 2,5-dimethoxytetrahydrofuran in acetic acid. The pyrrolyl ester (2) was converted into the corresponding carbohydrazide 3 which reacted with acetyl acetone, aromatic aldehydes, carbon disulfide in pyridine, and sodium nitrite to afford the corresponding dimethyl pyrazolyl 4, arylidene carbohydrazides 5a-d, oxadiazolyl thiole 6, and cabozide compound 8, respectively. The carboazide 8 reacted with different alcohols and amines to give the corresponding carbamates 9a-c and the aryl urea derivatives 10a-d. Heating of carboazide 8 in dry xylene afforded the pyridoselenolo-pyrrolopyrazinone 11. The latter compound was used as a versatile starting precursor for synthesis of other pyridoselenolo-pyrrolopyrazine compounds. The newly synthesized compounds and their derivatives were characterized by elemental analysis and spectroscopy (IR, 1H-NMR, and mass spectra). Some of the newly synthesized pyrrolyl selenolopyridine compounds showed remarkable antioxidant activity compared to ascorbic acid.

Keywords:

Antioxidant activity; pyridoselenolopyrazine; pyrroloseselenolopyridine; selenolopyridine; synthesis

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