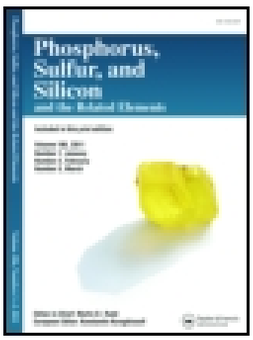

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Reactions of pyridoxal derivatives with phosphorus P(IV) acid chlorides

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ABSTRACT

Interaction of cyclic derivatives of pyridoxal (1-ethoxy- and 1-diethylaminofuropyridines) with chlorides of phosphoric and carboxylic acids is carried out with the participation of phenolic hydroxyl pyridoxal. Depending on the reaction conditions in the case of aminofuropyridine, the formation of phosphorylated aminofuropyridines and hydroxyfuropyridines is possible.

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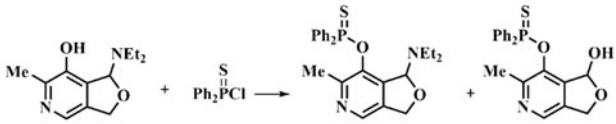
KEYWORDS
Pyridoxal; aminofuropyridine; phosphorylation

GRAPHICAL ABSTRACT



1. Results and discussion

Earlier we have showed that pyridoxal, which is a polyfunctional compound, is a convenient synthetic platform for obtaining new types of linear and cyclic structures.

Reactions of pyridoxal derivatives with inorganic, organic, phosphorus acids allows the preparation of salt structures with the participation of a pyridinium nitrogen atom.[1–3] With the participation of the aldehyde group, new azomethines and imidazolidines were synthesized.[4,5] The possibility of using pyridoxal as an alkylating agent was demonstrated in reactions with phenols and polyphenols.[6] Under the conditions of the Abramov reaction α-hydroxyphosphonates, existing as internal salts, in which the positive charge is located at nitrogen atom, whereas the negative charge – on oxygen atom were obtained.[1]

By the functionalization of 1-alkoxy or 1-dialkylaminofuropidines on the basis of pyridoxal the new biologically active compounds can be obtained. It has been found that the interaction of equimolar amounts of 1-diethylaminofuropyridine **1a** or 1-ethoxyfuropyridine **1b** with phosphorus P(IV) acids tiochlorides **2a,b**, produces products **3a–c** or **3a** and **4** depending on the reaction conditions (Scheme 1).

Similarly, reactions of furopyridines **1a,b** with aliphatic and aromatic carboxylic acid chlorides occur with the formation of the compounds **5a–d** (Scheme 2).

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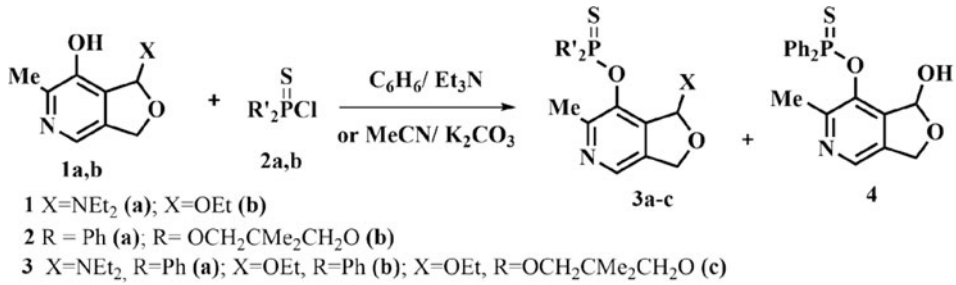

Scheme 1 Reactions of amino(alkoxy)furopyridines with diphenylchlorophosphine sulfide and 2-chloro-5,5-dimethyl-1,3,2-dioxaphosphorinane 2-sulfide.

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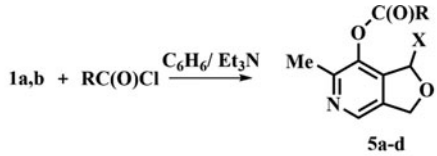

5 X=NEt_2, R=Me **(a)**; X=OEt, R=Me **(b)**; X=NEt_2, R=Ph **(c)**; X=OEt, R=Ph **(d)**

Scheme 2 Reactions of diethylamino(ethoxy)furopyridines with chlorides of aliphatic and aromatic carboxylic acids.

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