

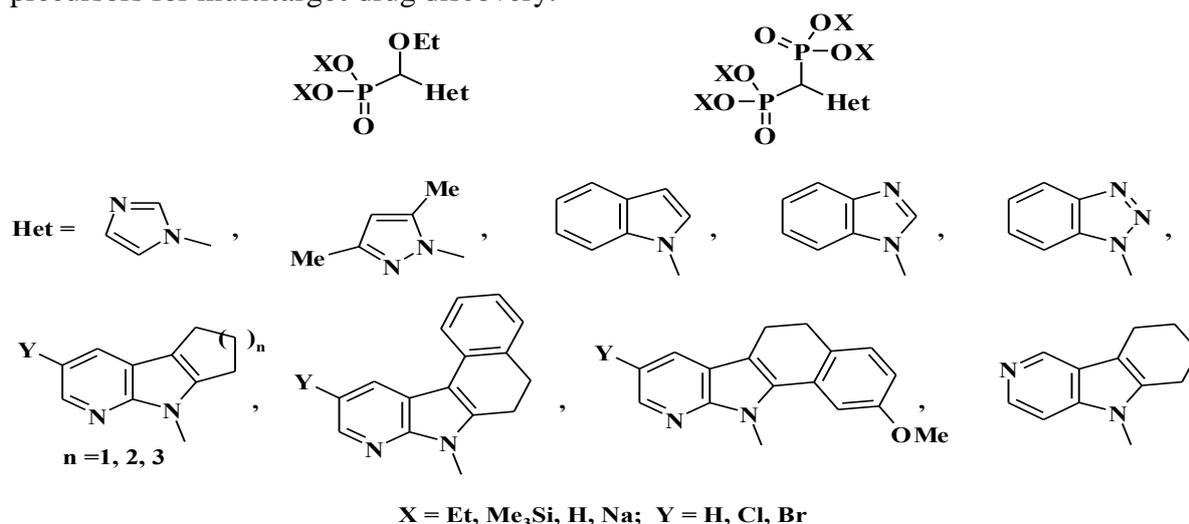
## Five-membered nitrogen containing heterocycle derivatives of mono and diphosphonic acids

A A Prishchenko, R S Alekseyev, M V Livantsov, O P Novikova, L I Livantsova, V I Terenin and V S Petrosyan

*M V Lomonosov Moscow University, Russia*

### Abstract

Functionalized organophosphorus acids and their derivatives with heterocyclic moieties are of great interest as effective chelating ligands and perspective bioactive substances with various properties. These acids are well-known biomimetics of hydroxyl (amino) carbonic acids and natural pyrophosphates, and some of them such as zoledronic, risedronic, and minodronic acids are widely used in medicine. We have synthesized the new functionalized mono- and diphosphonic acids and their derivatives including five-membered nitrogen heterocycles via two- or three-component aminomethylation of several trimethylsilyl esters of phosphorous acid using as starting compounds recently available NH-heterocycles and triethyl orthoformate. Trimethylsilyl-containing organophosphorus compounds easily react with methanol excess or with sodium methylate in methanol giving water soluble acids or their sodium salts in high yields. The resulting compounds are the perspective polydentate ligands and biologically active substances with versatile properties as well as the promising precursors for multitarget drug discovery.



**Scheme 1.** New Organophosphorus Derivatives of Five-Membered Nitrogen Heterocycles

### Biography

A A Prishchenko has completed his PhD from M V Lomonosov Moscow State University at the Department of Chemistry. Now he is the Leading Researcher of M V Lomonosov Moscow State University at the Department of Chemistry. He has published more than 200 papers in reputed journals on Organophosphorus Chemistry.

aprishchenko@yandex.ru

