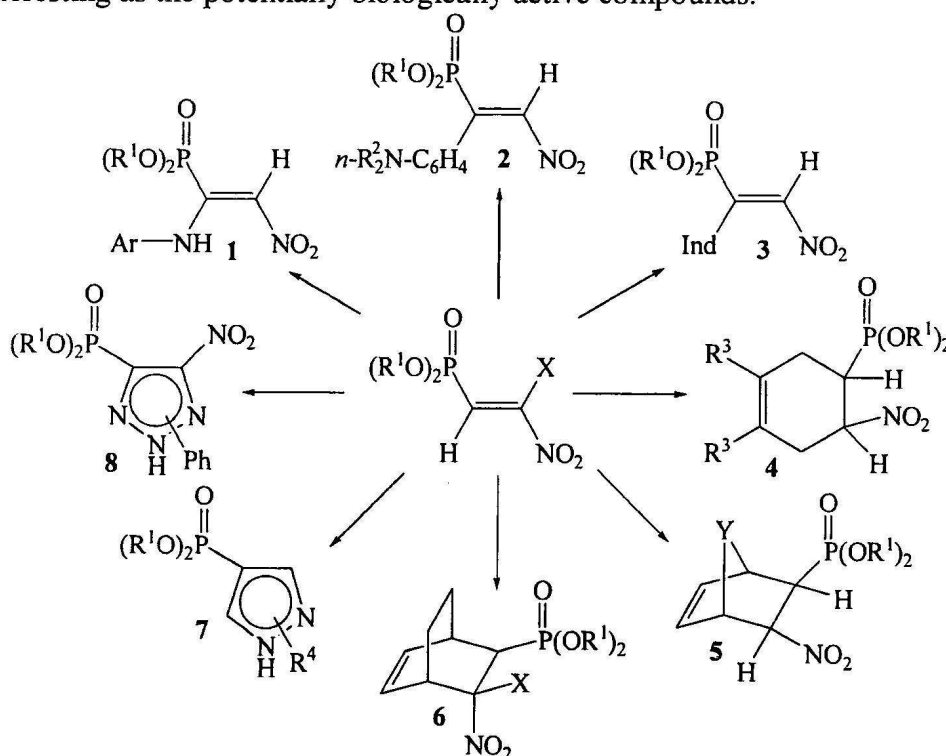


β -NITROETHENYLPHOSPHONATES ARE PERSPECTIVE SYNTONS FOR VERSATILE FUNCTIONALIZED ORGANOPHOSPHORUS COMPOUNDS

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Nitro- and halogenonitroethenylphosphonates have proven to be valuable reagents for the synthesis of versatile polyfunctionalized organophosphorus compounds. The versatility of these ethenylphosphonates in organic synthesis is largely due to their availability, high reactivity and transformation into a variety of functionalities. These highly electron – deficient structures are found to be extensively useful for the introduction of nitroethyl- and nitroethenylphosphonates blocks in the molecules of aromatic amines, indole and its derivatives. The following dehydrohalogenation of the initially formed Ad_N adducts (in the case of halogenocontaining substrates) allows to obtain new types phosphorylated nitroenamines (1), nitrostyrenes (2), nitrovinylindoles (3). As active dienophiles nitroethenylphosphonates readily undergo Diels-Alder reactions with various dienes. It provides an excellent method for the preparation of nitrocycloalkenyl- and nitroheterylphosphonates such as cyclohexene (4), norbornene and oxanorbornene (5), bicyclooctene (6) and others. 1,3-Dipolar cycloaddition of diazocompounds and azides to nitroethenylphosphonates allows to synthesize the phosphorylated pyrazoles (7) and 1,2,3-triazoles (8). Hydrogenation and followed hydrolysis of phosphorylated β -nitro-ethylindoles and some β nitrocyclenes leads to β -aminoalkyl- and β -amino-cycloalkylphosphonic acids, which are particularly interesting as the potentially biologically active compounds.



R¹ = CH₂CH₂Cl, *i*-C₃H₇; R² = H, CH₃, C₂H₅; R³ = H, CH₃; R⁴ = H, C₆H₅, C(O)Oalk;

X = H, Cl, Br; Y = CH₂, O; Ar = C₆H₅, *n*-CH₃-C₆H₄, *n*-Br-C₆H₄, *n*-(CH₃)₂N-C₆H₄

The main regularities of the investigated reactions and the structural peculiarities of newly obtained compounds are also discussed in the report.