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The Influence of the Structure of Phosphorus Acids Esters on their Reactivity in Aqueous and Nonaqueous Micellar Solutions

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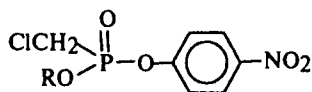
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The Influence of the Structure of Phosphorus Acids Esters on their Reactivity in Aqueous and Nonaqueous Micellar Solutions

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The kinetics of the basic hydrolysis of O-alkyl-O-p-nitrophenyl-chloromethylphosphonate in aqueous micellar solutions of cetylpyridinium bromide (CPB) and the aminolysis of these substrates by n-hexylamine in the reverse micelles of polyethylene glycole-600-monolaurate (PM) in toluene has been studied.



R = n-C₂H₅ (1), n-C₄H₉ (2), n-C₆H₁₃ (3), n-C₈H₁₇ (4)

The substrate specificity in the hydrolysis is revealed. An increase in the CPB catalytic effect in the series 1 < 2 < 3 was observed. The 100-fold acceleration of the reaction in the micelles was found for 3. The observed rate constant of the aminolysis increases by a factor of 10 in the nonionic micelles. Unlike the CPB micelles the catalytic activity of the PM micelles little differs over the series of the substrates. The largest micellar rate effect is observed for the ethoxy substrate. The kinetic data are treated in terms of the pseudo-phase model of micellar catalysis.