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Synthesis of an Organophosphorus Analog of Acetylcholine

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Poster Presentation 28

SYNTHESIS OF AN ORGANOPHOSPHORUS ANALOG OF ACETYLCHOLINE

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Acetylcholine (ACh) is the most widely studied of all neurotransmitter substances. For normal nerve function, the enzyme acetylcholinesterase (AChE) must hydrolyze ACh into its basic chemical constituents, choline and acetate. AChE is readily inhibited by organophosphorus (OP) compounds like sarin and soman--both nerve gases--as well as various pesticides. OP compounds, therefore, have been widely used to study the mechanism of ACh hydrolysis via AChE. Recent studies examining the stereoselectivity of that process, however, have yielded conflicting results. Hence, it is hoped that new studies with a novel OP analog of ACh will provide definitive information about the stereoselectivity of the mechanism of AChE action. Obviously, the first phase of this project must be the synthesis of that novel OP inhibitor. We present our efforts in this area and outline future directions.