Synthesis of 2-Functionalized 4-(Diethoxyphosphorylmethyl)-5-(1-bromoalkyl)furans and Their Reactions with Amines

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Abstract — Phosphorylation of esters and nitriles of 4-chloromethyl-5-alkylfuran-2-carboxylic acids with triethyl phosphite yields the corresponding phosphonates. These compounds are brominated with *N*-bromosuccinimide in carbon tetrachloride at the α-position of the alkyl radical. The resulting 2-(1-bromoethyl)-, 2-(1-bromopropyl)-, and 2-(1-bromoisobutyl)furans react with secondary amines following the scheme of nucleophilic substitution. The dehydrobromination product was isolated only in the reaction of ethyl 4-(diethoxyphosphorylmethyl)-5-(1-bromoisopropyl)furan-2-carboxylate with triethylamine, but its yield was low. The reactions of bromo phosphonates with lithium carbonate in DMF result in their decomposition.