O,O-DIALKYL-2-NITROETHENEPHOSPHONATES IN THE HALOGENATION REACTIONS

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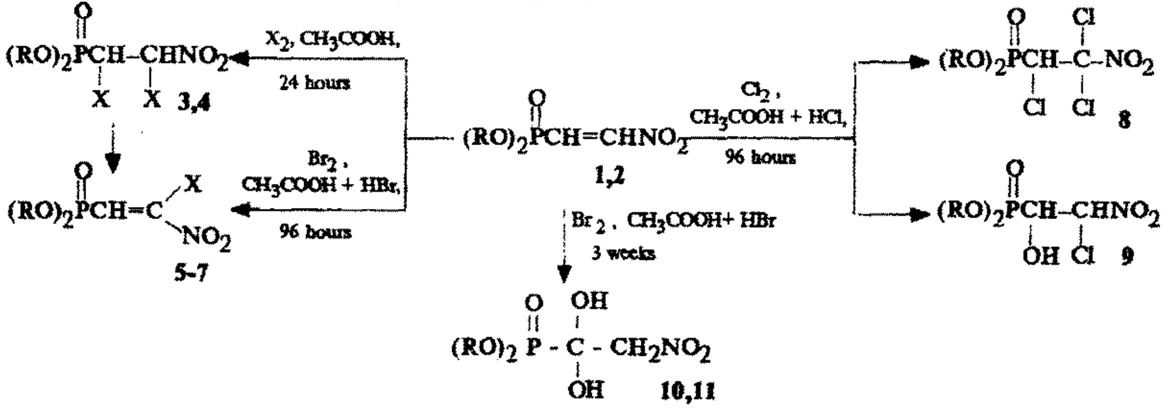
Halogene introduction into phosphor containing nitrocompound molecules varies their synthetic abilities and makes them exclusively perspective for organic synthesis. We have investigated halogenation of *O,O*-dialkyl-2-nitroethenephosphonates **(1,2)** to find out the influence of halogene (Br, Cl) nature and reaction conditions upon the process proceeding. It was found that bromination and chlorination of compound (I) in ice acetic acid at room temperature during 24 hours results in dihalogenides **(3,4)** readily transformed under the storage or when treated on silica gel into halonitroethenephosphonates **(5,6)**.



R = C_2H_4Cl (1,3 -10); X = Br (3,5,7), Cl (4,6); R = *i* - C_3H_7 (2,11)

In the presence of corresponding hydrohalogenic acid the reaction proceeds along the other pathway and depends from the exposure time and halogene nature. Thus bromination of compounds **(1,2)** during 96 hours results in the formation of *gem*-bromonitroethenephosphonates **(5,7)**; chlorination of compound **(I)** under the same conditions leads to the easy separatable products **(8,9)**. When the exposure time is increased up to several weeks, bromination of nitroethenephosphonates **(1,2)** has been unexpectedly found to give products without halogene - *O,O*-dialkyl-1,1-dihydroxy-2-nitroethanephosphonates **(10,11)**. The structure of the products obtained is proved by means of IR, UV, and ^1H, ^{31}P, ^{13}C NMR spectroscopy.