Electrophilic and Nucleophilic Addition Reactions of α,β-Unsaturated Diphenylphosphoryl Compounds

M. Zh. Ovakimyan[a], G. Ts. Gasparyan[a], A. S. Poghosyan[a], A. S. Bichakhchyan[a,*], and L. V. Derdzyan[a]

[a] *Institute of Organic Chemistry, Scientific Technological Center of Organic and Pharmaceutical Chemistry, National Academy of Sciences of Armenia, Yerevan, 0014 Armenia*
**e-mail: arpenikb@mail.ru*

Received September 18, 2019; revised November 20, 2019; accepted November 22, 2019

Abstract—Procedures were developed for the synthesis of diphenyl(prop-1-en-1-yl)phosphine oxide and cyclohex-1-en-1-yl(diphenyl)phosphine oxide by alkaline hydrolysis of triphenyl(prop-1-en-1-yl)phosphonium bromide and cyclohex-1-en-1-yl(triphenyl)phosphonim bromide, respectively. The bromination of diphenyl(vinyl)phosphine oxide, diphenyl(prop-1-en-1-yl)phosphine oxide, and cyclohex-1-en-1-yl(diphenyl)phosphine oxide with excess bromine gave the corresponding 1,2-dibromo derivatives. Dehydrobromination of 1,2-dibromoethyl(diphenyl)phosphine oxide and 1,2-dibromopropyl(diphenyl)phosphine oxide with sodium hydroxide afforded 1-bromoethenyl(diphenyl)phosphine oxide and 1-bromoprop-1-en-1-yl(diphenyl)phosphine oxide. Addition of bromine and methanol to 1-bromoethenyl(diphenyl)phosphine oxide and 1-bromoprop-1-en-1-yl(diphenyl)phosphine oxide was studied.

Keywords: bromination, dehydrobromination, nucleophilic and electrophilic addition, diphenylphosphoryl compounds, phosphine oxides, radical halogenation.

DOI: 10.1134/S1070428020010157