REACTION OF DICHLOROCARBENE TO PYRIDINES AND CONDENSED PYRIDINES

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Quinolines (1) and ethanol (or methanol) were dissolved in chloroform, 50% sodium hydroxide solution was added in the presence of a small quantity of phase transfer catalyst, and mixture was stirred at room temperature, by which the corresponding 1,1-dichloro-2-ethoxy (or methoxy)-3-formyl-1a,2,3,7b-tetrahydro-1H-cyclopropa[c]quinolines were obtained in a high yield. However, the compounds (1) having a nitro group in 5, 6 or 8-position failed to give a dichlorocarbene adduct, and benzo[h]quinoline did form dichlorocarbene adduct.

Application of dichlorocarbene to 1-alkylpyridinium halides (2), obtained from pyridines and alkyl halides, in chloroform afforded 2-alkyl-1,1,3,3-tetrachloro-4-(trichloromethyl)-1a,2,2a,3a,4,4a-hexahydro-1H,3H-dicyclopropa[b,e]pyridines and/or 3-alkyl-1,1,4,4-tetrachloro-2-(trichloromethyl)-1a,2,3,3a,4a,4b-hexahydro-1H,4H-dicyclopropa[b,d]pyridines in a high yield. But, the compound (2) having a benzyl group in 1-position failed to give a dichlorocarbene adduct.

Treatment of isoquinolines (3) and 2-alkylisoquinolinium halides with dichlorocarbene in chloroform afforded the corresponding 1,1-dichloro-3-ethoxy-2-formyl-1a,2,3,7b-tetrahydro-1H-cyclopropa[c]isoquinolines and 1,1-dichloro-2-alkyl-3-(trichloromethyl)-1a,2,3,7b-tetrahydro-1H-cyclopropa[c]isoquinolines in a low yield. However, application of dichlorocarbene to 1-alkyl-2-benzoyl-1-cyano-1,2-dihydroisoquinolines, obtained from the Reissert compound of 3 and alkyl halides, in chloroform afforded 2-benzoyl-3-cyano-1,1-dichloro-1a,2,3,7b-tetrahydro-1H-cyclopropa[c]-isoquinolines in a high yield.