ESTERIFICATION OF ALCOHOLS WITH CARBOXYLIC ACIDS USING SULPHONYL CHLORIDES

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In connection with our studies on the synthesis of sterol esters with potential antifertility activity we endeavoured to investigate the role of the sulphonyl chloridex in our recently reported (Leslie Gunatilaka and Sotheeswaran 1978) esterification procedure. We have examined the use and role of benzenesulphonyl chloride and methane sulphonyl chloride as coupling agents.

Several alcohol and acid combinations were used in the esterification reactions. Benzene sulphonyl cholride was found to be a superior coupling agent than methane sulphonylchloride. The problem of whether the acids were initially converted to the mixed or symmetrical anhydride remained to be solved. Symmetrical and mixed anhydrides of para-nitrobenzoic acid were prepared. The former anhydride failed to react with tert-butanol. The mixed anhydride reacted with tert-butanol to give the same ester which was obtained when para-nitrobenzoic acid was esterified with tert-butanol under conditions given in Table.

Table

Reactants	Probable Intermediate	Yield[a]
p-Nitrobenzoic acid:, $PhSO_2$ Cl: Me_3 COH		
(I mole) (2 moles) (I mole)	$ArCO_2SO_2Ph$	63
(2 moles) (1 mole) (I mole)	$(ArCO)_2O$	00
p-Nitrobenzoic anhydride : Me_3COH	.....	00
(I mole) (I mole)		
Mixed anhydride of p-nitrobenzoic acid	.....	60
and benzenesulphonic acid : Me_3COH		
(I mole) (I mole)		

a Percentage yield of t-butyl-p-nitrobenzoate

The results are in keeping with the conversion of acid to the corresponding mixed anhydride (RCO_2SO_2Ph) before reacting with alcohol.

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Reference:

1. A. A. Leslie Gunatilaka and S. Sotheeswaran, *J. Chem. Soc.* (*Chem. Comm.*), 1978. 981.