A VERSATILE SYNTHESIS OF REISSERT COMPOUNDS

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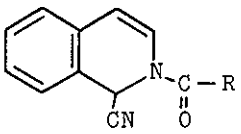
Reissert compounds were prepared by the reaction of heterocyclic base with acid chloride and trimethylsilyl cyanide in methylene chloride.

Reissert compounds[1] have been widely used for the synthesis of various heterocyclic compounds, especially for the synthesis of 1-benzylisoquinoline and 1-benzylisoquinoline-derived alkaloids.[2] They have also been used as a means to convert acid chloride to the corresponding aldehyde.[3] Many methods for the synthesis of Reissert compounds have been reported, the formation of Reissert compounds by the reaction of heterocyclic base with potassium cyanide and acid chloride in methylene chloride/water was considered to be the method[4] of choice. Water is used to dissolve potassium cyanide, however, when reactive acid chloride is used in the

reaction, competitive hydrolysis of acid chloride occurrs resulting in low yield of the Reissert compounds. We wish to report a homogeneous and anhydrous synthesis of Reissert compounds which proves to be superior than other previously reported syntheses.

Reaction of isoquinoline, acid chloride and trimethylsilyl cyanide[5] in methylene chloride for about 4 hr. gave the required Reissert compounds in good isolated yields. Aluminium chloride was found to be effective catalyst in this reaction. The work-up of this reaction was simply carried out by passing the reaction mixture through a short column of silica gel to remove aluminium salt.

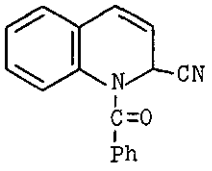


(I)

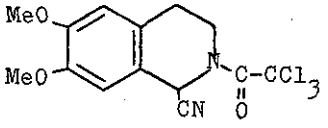
		yield(%)
a)	R = Ph.	84.2
b)	R = $3,4\text{-}(OMe)_2C_6H_4$	79.0
c)	R = Me	84.1
d)	R = OEt	88.3

Various acid chlorides were used successfully for the synthesis of Reissert compounds (Ia-Id). The reaction also worked well when isoquinoline was replaced with quinoline, for example, reaction of quinoline with benzoyl chloride and trimethylsilyl cyanide in methylene chloride together

with a catalytic amount of aluminium chloride, the corresponding Reissert compound (II) was obtained in 89% yield.



(II)



(III)

Dihydro Reissert compounds could also be synthesized by this method, however, catalytic amount of aluminium chloride was not required in this reaction. When a mixture of 6,7-dimethoxy-3,4-dihydroisoquinoline,[6] trichloroacetyl chloride and trimethylsilyl cyanide was stirred at room temperature overnight, the required dihydro Reissert compound[7] (III) was isolated in 86% yield. The success of the use of highly reactive trichloroacetyl chloride demonstrated the effectiveness of our method.

We are investigating the chemistry of some of the highly reactive Reissert compounds.

References and Footnotes

1 For a review, see F. D. Popp, in Advances in Heterocyclic Chemistry, A. R. Katritzky and A. J. Boulton, eds., Academic Press 1968, Vol. 9 p. 1 and references cited therein.

2 For a recent review, see F. D. Popp, Heterocycles., 1973, 1 165

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7 This compound has the following physical data: mp: 167-169°C. ir: 1690 cm^{-1}, nmr: 6.92 (s, C-8 ArH), 6.80 (s, C-5 ArH), 6.42 (s, -CH-CN), 3.99 (s, 2xOCH_3).

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