

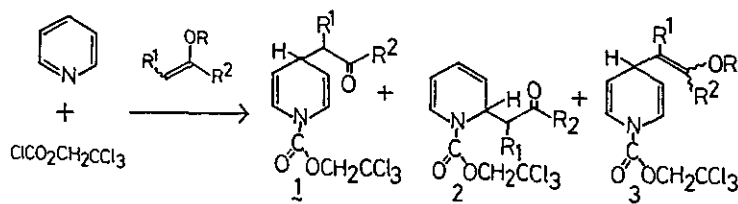
INTRODUCTION OF β -KETOALKYL GROUPS AT 4-POSITION OF PYRIDINE USING SILYL ENOL ETHERS

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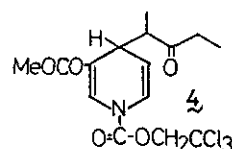
Recently we reported three new methods to introduce alkyl and aryl substituents at 4-position of pyridine with better than 99% selectivity.¹ Here we describe further approach to this problem using silyl enol ethers in order to introduce β -keto alkyl groups at 4-position of pyridine with almost complete selectivity. When pyridine is quaternized with ethyl chloroformate in dichloromethane and trimethylsilyl enol ethers of acetone and acetophenone were added, the corresponding 1, 4- (1') and 1, 2-dihydropyridines (2') were obtained in 54, 37% and 69, 21% yields, respectively. The same type of reaction was carried out using β, β, β -trichloroethyl chloroformate as quaternizing reagent to give better yields and almost complete regioselectivity as shown below. When *t*-butyldimethylsilyl enol ether of acetophenone was used, 3 was obtained quantitatively and was converted to 1 in high yield. Furthermore, methyl nicotinate and trimethylsilyl enol ether of 3-pentanone gave 4 in 71% yield.



Entry	R	R ¹	R ²	Solvent	Yield ^{a)} (%)		
					1	2 ^{b)}	3
1	Me ₃ Si	Me	Ph	CH ₃ CN	quant.	0	0
2		Me	Et		83	0	0
3		-(CH ₂) ₄ -			83	0	6
4		Ph	OMe		quant.	0	0
5		H	Ph		65	22	4
6	<i>t</i> -BuMe ₂ Si	H	Ph	CH ₂ Cl ₂	trace		quant.

a) Isolated yield by flash column chromatography

b) Product ratio(1:2) was determined by ¹H-NMR



1. K. Akiba, H. Matsuoka, and M. Wada, *Tetrahedron Lett.*, **22**, 4093 (1981);
K. Akiba, Y. Iseki, and M. Wada, *ibid.*, **23**, 429 (1982); *ibid.*, **23**, 3935 (1982).