Condensation Reaction of α– Aroyl–α–acetyl Ketene Cyclic Dithioacetals with Aromatic Aldehydes

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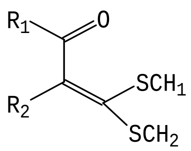
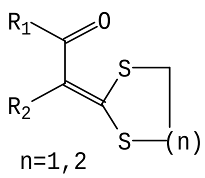
Abstract: The title compounds **3** and **4** condensed with aromatic aldehydes to give α–aroyl–α–cinnamoyl ketene cyclic dithioacetals **5** and **6** with sodium ethoxide as the base. The stereochemistry of **5** and 6 was assigned as E-configuration by ^{1}H NMR.

Keywords: α–aroyl–α–cinnamoyl ketene cyclic dithioacetals, aromatic, aldehydes, condensation reaction.

As a versatile three-carbon synthon, α–oxoketene dimethylthio acetals **1** have been applied in many fields[1, 2]. In our previous works[3-5], some properties, especially addition selectivity, of the α–oxoketene cyclic dithioacetals **2** were found to be quite different from those of **1**. Here α–aroyl–α–acetyl ketene cyclic dithioacetals **3** and **4** were allowed to condense with aromatic aldehydes, and fifteen new compounds **5** and **6** were obtained in moderate to high yields. But **5**, **6** from **1** could only be obtained in low yields.

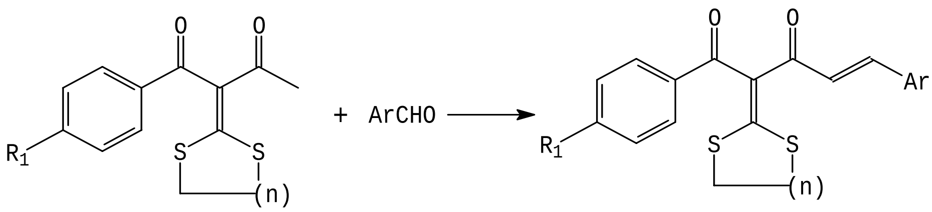


1



n=1,2

2



3 or **4** **5** or **6**

The experiments showed that optimum yields of 5 and 6 were obtained when the temperature of reaction was controlled between 40-60°C.

In our experiments, J between two protons of C'=C bond is about 15 Hz and this shows the stereochemistry of **5** and **6** is in E-configuration[6].

All compounds synthesized are assigned by their IR and ^{1}H NMR spectra.

Table

Substrate	Product	n	R	Ar	yield (%)
3a	**5a**	1	H	ph	59
3b	**5b**	1	H	m-O_2N-C_6H_4	52
3c	**5c**	1	H	p-$OCH_3C_6H_4$	58
3d	**5d**	1	H		51
3e	**5e**	1	H	phCH=CH	63
3f	**5f**	1	H	p-N $(CH_3)_2C_6H_4$	35
3g	**5g**	1	CH_3O		73
4a	**6a**	2	H	ph	72
4b	**6b**	2	H	p-N $(CH_3)_2C_6H_4$	52
4c	**6c**	2	H	p-$OCH_3C_6H_4$	80
4d	**6d**	2	H		74
4e	**6e**	2	H	phCH=CH	85
4f	**6f**	2	H		80
4g	**6g**	2	CH_3O	phCH=CH	64
4h	**6h**	2	CH_3O	ph	50

References

1. R. K. Dieter, *Tetrahedron*, **1986**, *42*, 3029.
2. H. Junjappa, H. Ila and C. V. Asokan, *Tetrahedron*, **1990**, *46*, 5423.
3. Q. Liu and B. Z. Zhao, *ChineseChem Lett*, **1991,** *2,* 353.
4. Q. Liu and D. W. Dong, Z. Y. Yang, *et al* , *Chem. J. Chinese Univ*, **1993**, *14 (3),* 353.
5. Q. Liu, Z. M. Zhu, Z. Y. Yang, *et al* , *Chem. J. Chinese Univ*, **1993**, *14* (11), 1538.
6. Y. Z. Shi, X. Z. Sun, Y. H. Giang, *et al* . "*Spectral and chemical identification of organic compounds*", Science and Technology Press, Jiangsu Province, China. **1992.**

Received 24 June 1998