

UV ABSORPTION SPECTRA OF *para*-SUBSTITUTED *trans*-BENZOYL-PHENYL-ETHYLENE OXIDES

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The UV spectroscopical examination of the compounds prepared previously by Darzens condensation [1, 2] is described.

In our previous work the preparation of several *p*-substituted benzoyl-phenyl-ethylene oxides has been achieved by Darzens condensation. By NMR spectroscopy these compounds proved to be of *trans* configuration [3]. In the present work UV spectroscopical examination of the compounds has been carried out.

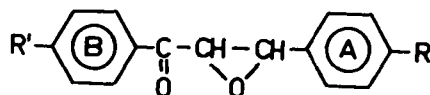
According to several authors, the epoxide-ring is able to conjugate with unsaturated groups, *e.g.* carbonyl group [4, 5]. Other authors agree that this conjugation effect is weaker than in the case of the ethylenimine-ring [6—9]. There is some experimental evidence that in substituted chalcones the conjugation extends to the whole molecule [10—13]. Such an evidence would be that *p*-substitution in any phenyl-ring results in either bathochromic or hypsochromic shift in the UV spectra. Another evidence is that the main absorption bands are found to be at higher wavelengths than in the case of similarly substituted benzaldehydes or acetophenones. The UV spectral data of *para*-substituted benzoyl-phenyl ethylene oxides can be found in Table I.

From the UV spectral data of *p*-substituted benzoyl-phenyl-ethylene oxides listed in Table I the following facts can be established.

1. The main absorption of the unsubstituted epoxy-ketone occurs at much smaller wave length (250 m μ) than in chalcone (312 m μ).
2. Substituents in the *p*-position of the B-ring result in remarkable bathochromic shift in the UV spectrum.
3. The same substituents in the A-ring, with the only exception of the nitro group, cause no shift.
4. Substituents in the *p*-position of both rings show the same shift as that of the B-ring, again with the exception of the nitro group.

From these facts the conclusion may be drawn that the conjugation does not extend to the whole molecule of epoxy-ketones. This may indicate that the epoxide-ring is able to conjugate only with the carbonyl group or not to conjugate at all. The only exception, the slight bathochromic shift of the nitro group can be explained with its own absorption.

Table I

UV absorption of *p*-substituted *trans*-benzoyl-phenyl-ethylene oxides

R'	R	μm
H	H	250 (247) [14]
OMe	H	287
Me	H	260 (262) [14]
Br	H	264
Cl	H	260 (261) [14]
NO ₂	H	276, 227 [14]
H	OMe	250, 230 [14]
H	Me	251 (251) [14]
H	Cl	250 (250) [14]
H	NO ₂	256
OMe	Me	288, 220
OMe	NO ₂	290, 219
Me	Me	260
Me	NO ₂	265
Br	Cl	264
Br	NO ₂	270
Cl	Cl	260 (261) [14]
Cl	NO ₂	266
NO ₂	NO ₂	270

References

- [1] Sipos, Gy., Gy. Schöbel, L. Balásperi: J. Chem. Soc. (C) 1970, 1154.
- [2] Sipos, Gy., Gy. Schöbel, L. Balásperi: Acta Chim. Hung. 68, 149 (1971).
- [3] Sohár, P., Gy. Sipos: Acta Chim. Hung. 67, 365 (1971).
- [4] Isaacs, N. S., R. E. Parker: Chem. Rev. 59, 737 (1959).
- [5] Cromwell, N. H., F. H. Schumacher, J. L. Adelfang: J. Amer. Chem. Soc. 83, 974 (1961).
- [6] Cromwell, N. H., M. E. Graff: J. Org. Chem. 17, 414 (1952).
- [7] Cromwell, N. H., R. J. Mohrbacher: J. Amer. Chem. Soc. 75, 6252 (1953).
- [8] Cromwell, N. H., R. A. Setterquist: J. Amer. Chem. Soc. 76, 5752 (1954).
- [9] Mohrbacher, R. J., N. H. Cromwell: J. Amer. Chem. Soc. 79, 401 (1957).
- [10] Szmant, H. H., A. J. Basso: J. Amer. Chem. Soc. 74, 4397 (1952).
- [11] Black, W. V., R. E. Lutz: J. Amer. Chem. Soc. 77, 5134 (1955).
- [12] Лаврушин, Ф., В. Н. Толмачев, Х. Д. Трушевич: Ж. общей химии 36, 46 (1966).
- [13] Трушевич, Х. Д., В. Н. Толмачев, В. Ф. Лаврушин: Ж. общей химии 35, 1534 (1965).
- [14] House, H. O., G. D. Ryerson: J. Amer. Chem. Soc. 83, 979 (1961).

УЛЬТРАФИОЛЕТОВЫЙ СПЕКТР ПОГЛОШЕНИЯ
ПАРА-ЗАМЕЩЕННЫХ ОКИСЕЙ ТРАНС-БЕНЗОИЛФЕНИЛЭТИЛЕНА

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