

Electrochemical Synthesis of 2-Methoxy-1,4-dioxans by Anodic Oxidation of β -Oxocarboxylate Ethylene Acetals

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Summary Anodic oxidation of the β -oxocarboxylate ethylene acetals (**1a—e**) in anhydrous methanol gives the 2-methoxy-1,4-dioxans (**2a—e**) in 40—60% yield.

OXIDATIVE substitution is a type of reaction which is of current interest,¹ and the Kolbe reaction, producing carbonium ions, should provide a good means for carrying out such reactions. In view of our interest in this area,²

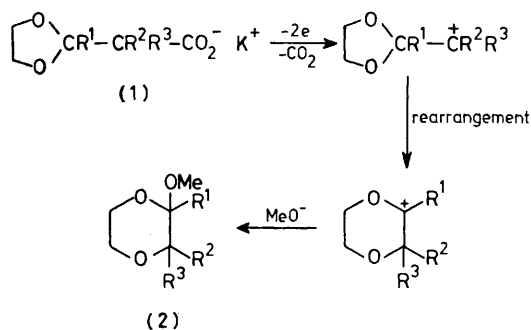
we have studied the anodic oxidation of the β -oxocarbonylate ethylene acetals (**1a—e**), giving the 2-methoxy-1,4-dioxans (**2a—e**).³

(g.l.c.) of diastereoisomers, which have been separated. Attempts are being made to separate the isomers of (**2e**). We suggest the mechanism in the Scheme for this reaction.

TABLE. Electrolysis of (**1**) to give (**2**).

	Carboxylate (1)			% Yield of (2)
	R ¹	R ²	R ³	
a	Me	H	H	40
b	Me	Me	H	40
c	Me	Me	Me	45
d	Me	Et	H	60
e	-[CH ₂] ₃ -		H	40

Electrolyses were carried out for 1M solutions of the potassium carboxylates in anhydrous methanol in an undivided cell with a graphite anode at a potential > 2 V (current density *ca.* 0.2 A cm⁻²). The products obtained (Table) were characterized by n.m.r. and mass spectroscopy. Compounds (**2b**) and (**2d**) were obtained as 1:1 mixtures



SCHEME

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¹ J. A. Zoltewicz, *Topics Current Chem.*, 1975, **59**, 33.

² D. Lelandais and M. Chkir, *Compt. rend. (C)*, 1975, **281**, 731; D. Lelandais, Sandbjerg Meeting, 1975, Denmark; M. Chkir, Thèse, Paris, 1975.

³ N. V. Kutnetsov, A. A. Svischckuk, and I. I. Kosavtsev, *Dopovidi Akad. Nauk Ukrain. R.S.R.*, 1969, **B31**, 11, 1016.