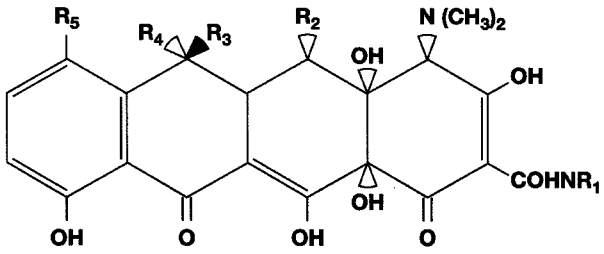
BIO-RAD

Separation of Tetracycline Antibiotics by MEKC

Tetracyclines represent a group of antibiotics produced by various Streptomyces species. They inhibit protein synthesis in prokaryotes by blocking the binding of aminoacyl tRNAs to ribosomes. Tetracyclines consist of four fused six-membered rings which differ in their substituents (Figure 1). These species can be separated by micellar electrokinetic capillary chromatography (MEKC) using Triton® X-100 as the pseudophase. Because of their large ring structures, tetracyclines can be detected with good sensitivity at 265 nm.

Analysis Conditions

Instrument	BioFocus® 3000 TC system
Capillary	24 cm x 25 µm, coated with linear polyacrylamide
Run buffer	200 mM sodium phosphate + 0.12% reduced Triton X-100 (pH 2.2)
Purge protocol	60 seconds, with run buffer
Injection	pressure at 10 psi * second
Polarity	positive to negative
Voltage	10 kV (observed current 36 µA)
Detection	265 nm
Cartridge temperature	20 °C
Autosampler temperature	20 °C



	R_1	R_2	R_3	R_4	R_5
Chlortetracycline	H	H	OH	CH_3	Cl
Oxytetracycline	H	OH	OH	CH_3	H
Tetracycline	H	H	OH	CH_3	H
Epitetracycline	H		CH_3	OH	

Fig. 1. Structures of tetracycline antibiotics.

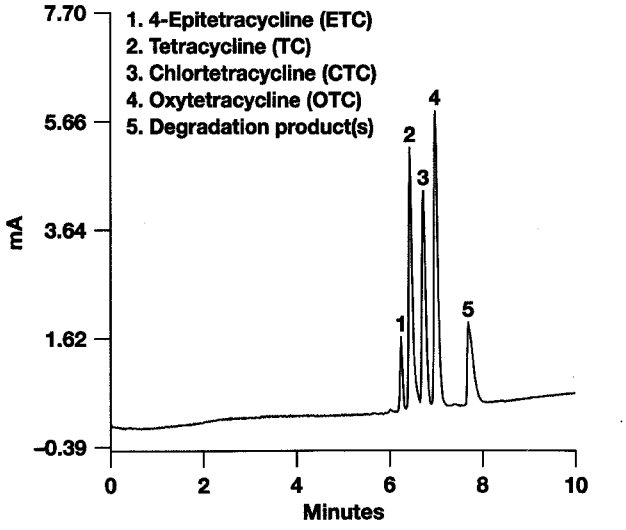


Fig. 2. Separation of tetracyclines by MEKC.

Triton is a trademark of Rohm and Haas.

Bio-Rad Laboratories

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