CAPSULES
preliminary notes and applications from Bioanalytical Systems, Inc.

Erythromycin Formulations

Purpose

Erythromycin (F1) is a widely used macrolide antibiotic produced by the bacterium *Streptomyces erythreus*. Erythromycin is prescribed for the treatment of bacterial and mycoplasmic infections, particularly in cases of penicillin resistance or allergy. The therapeutic concentration in blood is 1 µg/mL.

Erythromycin is manufactured and formulated in a variety of different salts and esters. In this report we show that LCEC using a thin-layer amperometric detector is a feasible method for determining erythromycin free base.

Existing Methods

Microbiological assays are the standard for determining antibacterial activity, but these are not specific to erythromycin. LC is suitable for separation, but UV detection is not sensitive enough. Post-column derivatization followed by fluorescence detection is a sensitive but elaborate procedure.

Conditions

System: BAS 400 Liquid Chromatograph
Detector: BAS LC-4B
Electrode: BAS glassy carbon
Potential: + 0.90 V vs Ag/AgCl
Column: BAS 3 µm Phase II ODS reverse-phase (100 x 3.2 mm)(PN MF-6213)
Mobile Phase: 61.5 % (v:v) 56 mM sodium acetate pH 7.0, 35 % acetonitrile, 3.5 % methanol. Flow rate was 1 mL/min.
Detection Limit: 10 ng injected (S/N = 4)
Linear Range: 10 ng to at least 2 µg injected

Sample Preparation

A calibration curve was generated by diluting appropriate amounts of erythromycin free base in mobile phase. Injection volume was 20 µL.

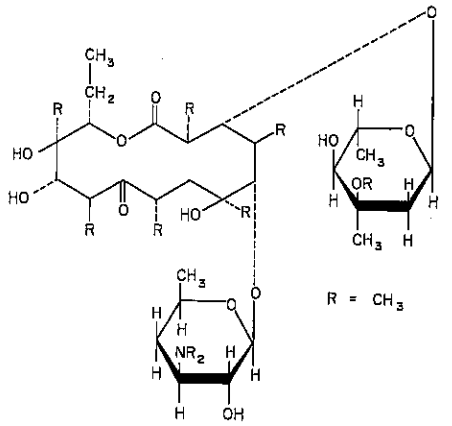

Figure 1. Structure of erythromycin-A free base.

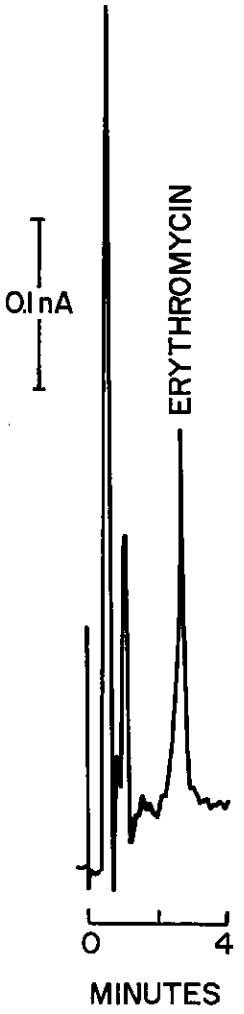

Figure 2. Chromatogram of 50 ng erythromycin.

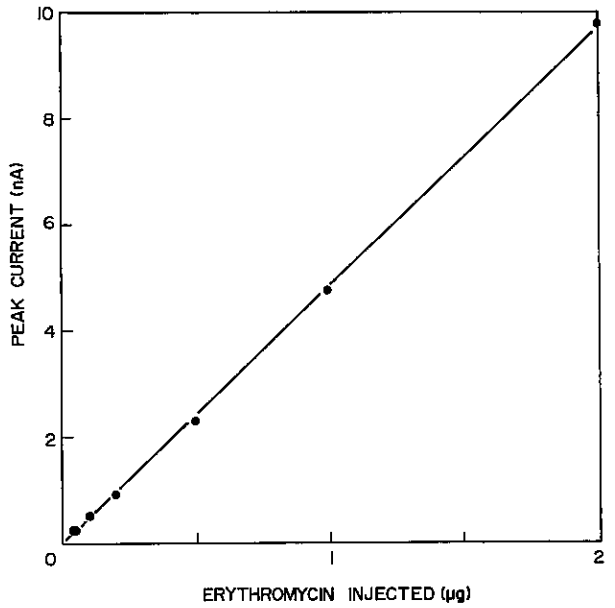

Figure 3. Calibration curve for erythromycin standards.

Notes

A typical chromatogram of erythromycin is presented in F2. A calibration curve is presented in F3.

The determination of erythromycin presented above can be duplicated using the BAS 200 Problem Solver.

Reference

D. Croteau, F. Vallee, M.G. Bergeron and M. LeBel, J. Chromatogr. 419 (1987) 205-212.