CAPSULES
preliminary notes and applications from Bioanalytical Systems, Inc.

Temafloxacin In Biological Matrices

PURPOSE

Separation and fluorescence detection of the antibiotic temafloxacin.

Temafloxacin (F1) is a quinolone antibiotic used for both gram-positive and gram-negative bacteria. About 98% of the dose is excreted as unchanged temafloxacin, while the remainder is metabolized to ethylenediamine derivatives (EDA, MEDA) and aminoquinolone (AQ). Typical therapeutic doses range from 800-1200 mg/day, with plasma levels averaging 4-6 µg/mL.

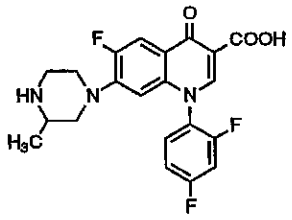

Figure 1. Structure of temafloxacin

EXISTING METHODS

Temafloxacin, being an antibacterial, can be monitored by bioassay. But bioassays do not provide the speed, sensitivity or specificity required for pharmacokinetic and metabolic studies.

REFERENCE

High-Performance Liquid Chromatographic Procedures for the Determination of Temafloxacin in Biological Matrices, G.R. Granneman and L.L. Varga, J. Chromatogr. 568(1991)197-206.

CONDITIONS

Detector: Fluorescence, ex. = 280 nm, em. = 389 nm cutoff filter
Column: 7 µm, C_{18}, 250 x 4.6 mm
Mobile Phase: Acetonitrile:water (53:47) containing 0.04 M H_3PO_4, 0.01 M NaH_2PO_4, 0.2% sodium dodecyl suflate, 0.005 M N-acetylhydroxamic acid.
Flow rate was 1.5 mL/min
Detection Limit: 10 ng/mL (1 ng/mL using an alternative liquid-liquid extraction).
Linear Range: 0.05-10 µg/mL

SAMPLE PREPARATION

Since temafloxacin is approximately 26% bound to plasma proteins, sodium dodecyl sulfate was used as a displacing reagent. Plasma samples (0.4 mL) were combined with buffer and the displacing reagent, then centrifuged through ultrafiltration membranes. Filtrates were directly injected onto the LC system. An alternative liquid-liquid extraction with methylene chloride and ethanol also was developed.

Urine samples were directly injected after a 20- to 100-fold dilution in mobile phase.

NOTES

A sample chromatogram is presented in F2. The internal standard was a *p*-bromophenyl-substituted quinolone.

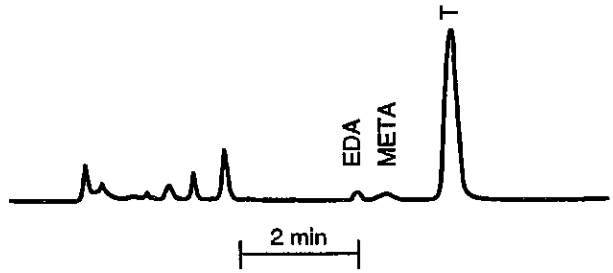

Figure 2. Chromatogram of plasma from a subject receiving 200 mg temafloxacin.

The separation of temafloxacin presented above can be duplicated on the BAS-480 or BAS-200 Liquid Chromatograph, equipped with a BAS FL-45 Fluorescence Detector.

The information in this publication is supplied as a service to our customers. Performance of the methodology has not necessarily been verified by BAS technical staff.