CAPSULES
preliminary notes and applications from Bioanalytical Systems, Inc.

Amodiaquine (antimalarial) in Blood

Purpose

Amodiaquine (Am, F1), a 4-aminoquinoline antimalarial drug is effective for the treatment of chloroquine-resistant strains of malaria. There have been some reports of serious side-effects, so sensitive assay procedures were needed to study this drug and its metabolites during treatment. The metabolites are desethylamodiaquine (DEAm), 2-hydroxydesethylamodiaquine (HDEAm), and bisdesethylamodiaquine (bDEAm).

Existing Methods

LCUV, but HDEAm has not been reported and sensitivity is poor.

Reference

Sensitive Analysis of Blood for Amodiaquine and Three Metabolites by High-Performance Liquid Chromatography with Electrochemical Detection, D.L. Mount, L.C. Patchen, P. Nguyen-Dinh, A.M. Barber, I.K. Schwartz and F. C. Churchill, J. Chromatogr. 383 (1986) 375-386.

Conditions

Detector: BAS LC 4B/17
Electrode: BAS glassy carbon
Potential: +0.8 V vs. Ag/AgCl
Column: 5 µm C-18 (15 x 2.1 mm)
Mobile Phase: 30% (v/v) methanol; 10% 0.025 M sodium pentanesulfonate with 0.01 M diethylamine and 0.0002 M EDTA; 60% 0.025 M ethanesulfonic acid with 0.01 M diethylamine and 0.0002 M EDTA. Flow rate = 0.95 mL/min.
Detection Limit: 1 ng/mL for Am, DEAm and bDEAm; 3 ng/mL for HDEAm, (S/N=3)
Linear Range: linear for in vivo concentrations

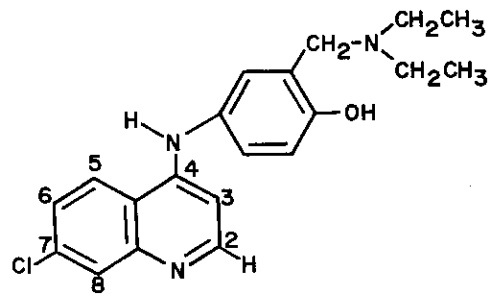
Sample Preparation

Samples were extracted in a 1:6 (v/v) solution of 50% aqueous K_2HPO_4 and ethyl acetate, then centrifuged. The organic layer was dried, redissolved in mobile phase, sonicated to disperse lipids, and filtered. Injection volume was 10 µL.

Notes

Recovery was 68% for Am, 80% for DEAm, 52% for bDEAm, and 69% for HDEAm.

Blood samples stored at 5°C for up to 16 weeks showed no detectable decrease in DEAm and HDEAm levels.



AMODIAQUINE

Figure 1. Structure of amodiaquine.

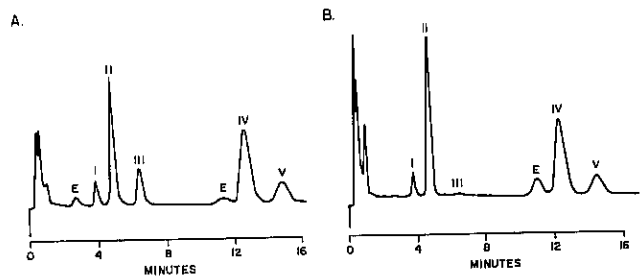


Figure 2. A. Blood sample containing standards. B. Blood sample from patient administered Am. I = bDEAm II = DEAm III = Am IV = internal standard V = HDEAm E = impurities.

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UV detection at 340 nm produced similar results with an injection volume of 20 µL. However, EC detection limits were an order of magnitude lower than those for UV for Am, DEAm and bDEAm, and 2 orders of magnitude lower for HDEAm. Omit EDTA from the mobile phase for UV detection.

This determination can be duplicated using the BAS 400 Liquid Chromatograph and a BAS Biophase column.

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.