SHORT COMMUNICATIONS

Simulteneous Determination of α - and B - Arteether in Arteether Samples and Formulations by U.V. Spectrophotometry.#

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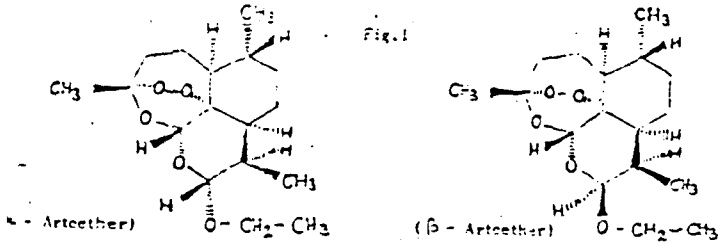
Arteether is an artemisinin derivative for treatment of cerebral malaria. Arteether has two isomers α and β. It is now undergoing clinical trials at C.D.R.I., Lucknow. Arteether has no U.V. absorption above 220nm. Therefore it was treated with 1N HCL which gives two specific U.V. absorption maximum at 256 nm and the other at 310 nm.

ARTEETHER[1,2,3,4,5], (Fig. 1) is an ethyl ether derivative of qinghaosu (artemisinin) which is extracted from **Artemisia annuma**. Arteether has been developed in an effort to enhance the anti-malarial activity. α-and β- erteether are the two isomers which are formed by the reduction of artemisinin by sodium borohydride followed by ethylation of dihydro artemisinine so obtained with ethyl-α alcohol in presence of boron trifluoride etherate.



The present study was taken up in order to develop as spectrophotometric method of estimation for α-and β-arteether in the bulk drug samples and in its formulations.

Standard samples of αand β-arteether were obtained from Central Institute for Medicinal and Aromatic Plants, Lucknow.

The U.V. spectrophotometer used was Shimadzu U.V. Vis 260 spectrophotometer and TLC plates used in the study were obtained from E. Merck (No.5737).

The stock solutions of αand β-arteether were prepared by dissolving 5mg each in hexane in 5ml volumetric flasks. The test solution were prepared by dissolving samples equivalent to 20mg of arteether in hexane.

The TLC plate, 20x20 cm, was divided in 8 equal parts. The first three parts were loaded with 50 μg, 100 μg and 150 μg of β-arteether, fourth part was loaded with 400 μg of test solution and fifth, sixth

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Table - 1

Sample No.	Percent of α-arteether	Percent of β-arteether	Total percentage of arteether	Total percentage of Arteether by TLC densitometric method
1	29.29	67.70	97.99	99.02
2	30.42	64.56	94.98	—
3	32.71	66.15	98.86	—
4	30.76	71.86	102.62	100.98
Injection	32.87	68.57	101.44	100.06

and seventh parts and with 100, 150 and 200 μg of α- arteether leaving last park as blank. Chromatogrpahy was carried out in glass TLC tanks, saturated with hexame : ethyl acetate (9:1) as mobile phase and run to a height of at least 15 cm. Plates were removed air dried, and exposed for 10 minutes with HCl vapour produced by drop-wise adding conc. H_2SO_4 in conc. HCl, in a glass tank. The light brown zones developed Rf = 0.25 & Rf = 0.4 were scooped out separately and estracted with 3x5 ml of chloroform : methanol (1:1). The extracts were concentrated to dryness and the residue were treated with 1N HCl for 3 hrs. and O.D. recorded at about 310 nm after making the final vol. 5 ml in each case, except the extract of β-arteether from sample where volume was kept at 10 ml keeping the solution from extract of blank part as blank. The concentration of the α -and β-arteether in the sample and arteether injection were calculated by using the standard curve so obtained. Recoveries of α-and β- arteether were calculated by adding known amount of authentic α-and β-arteether to pre-analysed samples of arteether and arteether injection.

The calibration curves for α-and β-arteether were linear in the range of 100 to 200 μg and 50 to 150 μg respectively. The correlation for α-and β-arteether are 0.9954 and 0.9999 respectively. Assay data of the arteether samples and arteether injections analysed by the present method are given in **Table - 1**.

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