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# CZE and HPTLC methods for simultaneous determination of Candesartan in binary mixtures with amlodipine and hydrochlorothiazide

**Hytham M Ahmed[1], Sohila M Elonsy[2], Fawzy A El Yazbi[3], Rasha A Shaalan[3] and Tarek S Belal[3]**
[1]Menoufia University, Egypt
[2]Damanhour University, Egypt
[3]University of Alexandria, Egypt

Two methods were developed for the simultaneous determination of the antihypertensive drugs Candesartan (CAN), Amlodipine (AML) and Hydrochlorothiazide (HCT) in their combined tablet dosage form. Method-1: Capillary zone electrophoresis (CZE) was performed. Electrophoretic conditions were optimized to improve separation, sensitivity and rapidity. The proposed method used a fused silica capillary (70 cm × 75 µm id) and the background electrolyte was 40 mM phosphate buffer pH 8, with 9 second injection time. The applied voltage was 30 kV. The diode array detector (DAD) was set at 210 nm for measurement of AML and CAN and 225 nm for HCT. The three compounds were resolved in less than 7 min with migration times 4.18, 5.36 and 6.74 min for AML, HCT and CAN, respectively. The described method was linear over the range of 5-100, 2.5-100 and 2.5-50 µg/mL for AML, HCT and CAN, respectively with correlation coefficients >0.9993. Method-2: HPTLC analysis was carried out on aluminum-backed sheet of silica gel using chloroform, methanol and ammonia in the ratio (8:2:0.2) as mobile phase. Retardation factors were 0.35, 0.5 and 0.75 for HCT, CAN and AML, respectively. Quantification was achieved with UV densitometry at 365, 265 and 274 nm for AML, CAN and HCT, respectively. The linearity ranges were 0.1-0.7, 0.05-0.5 and 0.025-0.5 µg/spot for AML, CAN and HCT, respectively with correlation coefficients >0.9992. The analytical performance of both methods was thoroughly validated according to International Conference on Harmonization (ICH) guidelines with respect to system suitability, linearity, ranges, precision, accuracy, specificity, robustness, detection and quantification limits. The proposed CZE and HPTLC methods were successfully applied to estimation of the drugs in laboratory prepared mixtures and in their combined tablets dosage form. No chromatographic interference was observed from the tablets excipients.

## Biography

Hytham M Ahmed is a Professor in Pharmaceutical Analysis Department at Menoufia University, Egypt. He has published more than 25 articles to his credit.

hmaahmed@yahoo.co.uk