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Simultaneous Determination of Estradiol, Ethinyl Estradiol and Estrone in Cosmetics by HPLC

SHIN-HAO CHEN, SHOU-CHIEH HUANG, YU-PEN CHEN,
LIH-CHING CHIUEH AND DANIEL YANG-CHIH SHIH

Division of Research and Analysis, FDA

ABSTRACT

A high performance liquid chromatographic method was developed for simultaneous determination of Estradiol, Ethinyl estradiol and Estrone in cosmetics, using Lichrospher RP-18 (I.D. 4.0 mm × 25 cm, 5 μm) column. In order to investigate the quality of marketed cosmetics, 11 samples were randomly collected by local health bureaus in Taiwan area during the year of 100. A mixture of water and methanol (50 : 50, v/v) was used as mobile phase. Flow rate was 0.8 mL/min and the chromatography was monitored by absorbance at 280 nm wavelength. The related coefficients R^2 , of regression equations of the three calibration curve were 0.9974-1.0000. The relative standard deviations (RSD) of the three estrogen ingredients for intraday and interday analysis of relative standard deviation (RSD) were less than 9.1%. The average recoveries of these three ingredients spiked in sample ranged from 86.1 to 117.6%. The RSD's of average recoveries were less than 2.2%. The limits of quantitation in cosmetics were 0.5 μg/mL for Estradiol, Ethinyl estradiol and Estrone.

Key words: Estradiol, Ethinyl estradiol, Estrone, HPLC