

DETERMINATION OF CYCLODEXTRINS BY CAPILLARY LIQUID CHROMATOGRAPHY WITH INDIRECT CONDUCTIMETRIC DETECTION

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ABSTRACT

Cyclodextrins (CDs) contained in a bottled Japanese tea and a *wasabi* (Japanese horseradish) paste were determined by capillary liquid chromatography (LC) with indirect conductimetric detection based on dilution of the mobile phase due to the analytes. High electrical conductivity background was maintained by addition of 5 mM sodium nitrate in the mobile phase, and the analytes were visualized by decreases in the background when they eluted. The dynamic reserve, defined as the ratio of the background to its noise level, achieved under the present conditions was 1.7×10^5 , which was much larger than that achieved by UV absorption detection. This means that indirect conductimetric detection gave better sensitivity than indirect UV absorption detection. A capacitively coupled contactless conductivity detector was convenient to monitor the effluents from capillary columns with minimum extra-column band broadening. The signals as negative peaks were linear to the concentration of the analytes, and the concentration detection limits achieved at $S/N=3$ were 0.02, 0.05 and 0.02% (w/v) for α -, β - and γ -CD, respectively, corresponding to the mass detection limits of 30-75 ng for 0.15 μ L injection. The present detection method is not selective but universal, and it is useful in capillary LC when analytes have neither chromophore nor fluorophore groups.

Keywords: *Capillary liquid chromatography, Indirect conductimetric detection, Capacitively coupled contactless conductivity detector, Cyclodextrins*

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