Abstract

A method based on capillary zone electrophoresis (CZE) with UV detection was developed for simultaneous separation and determination of flavonoids rutin, hesperidin and diosmin.

The analysis was performed in a fused-silica capillary with effective length 50 cm, i.d. 50 μm, voltage – 30 kV and 25 °C. UV detection was used at 200 nm, 246 nm and 280 nm. The samples were loaded hydrodynamically at a pressure of 50 mbar for 6 s. A single analysis took less than 6 minutes.

The separation was optimized by examining a number of experimental conditions, such as concentration of the electrolytic system, pH, addition of organic solvents and cyclodextrins.

The optimal background electrolyte consisted of 35 mM natrium tetraborate with 2.5% of methanol (adjusted to pH* 9.0 with boric acid) and 1.5 mM α-CD. The calibration graphs were linear for both rutin (100.58 – 1005.80 μg/ml; r = 0.9991), hesperidin (90.33 – 903.29 μg/ml; r = 0.9785) and diosmin (45.56 – 455.60 μg/ml; r = 0.9972). Propylparaben was chosen as the internal standard.

The method was applied to the assay of the flavonoids in a nutraceutical HEMOSTOP® PROBIO, capsules and characterized by RSD 3,25% (rutin), 4,12% (hesperidin) and 3,98% (diosmin), n = 3.

Keywords

Flavonoids, rutin, hesperidin, diosmin, capillary zone electrophoresis, reversed electroosmotic flow, nutraceuticals.