

Abstract

In this study, capillary zone electrophoresis with UV detection was developed for separation and determination of impurities pyridine and isoquinoline in quaternary ammonium compounds. The analysis was performed in a fused silica capillary at 20 kV and 25 °C with UV detection at 210 nm and 254 nm. The total length of the capillary was 58 cm, the effective length was 49,5 cm and its inner diameter was 75 µm. The injection was carried out for 6 seconds and under pressure of 50 mbar. The analysis took less than 5 minutes.

The optimal background electrolyte consisted of 70 mM acetic acid with 5% (v/v) of methanol. pH was adjusted to 4,7 with sodium hydroxide. As internal standard was chosen imidazole. The calibration graphs were linear for both pyridine (0,1 – 10,4 µg/ml; $r^2 = 0,9988$) and isoquinoline (0,1 – 9,98 µg/ml; $r^2 = 0,9972$). The limits of detection were 0,06 µg/ml for pyridine and 0,02 µg/ml for isoquinoline.

The optimized method has been used to determine the content of pyridine and isoquinoline as impurities in samples of quaternary ammonium compounds.