Fast electrophoresis chip analysis of ciprofloxacin and enrofloxacin in pharmaceutical formulations

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Electrophoresis chip with fluorescence detection was used to achieve rapid and highly efficient separation methodology for the analysis of ciprofloxacin and enrofloxacin in pharmaceutical formulation. The determination of ciprofloxacin and enrofloxacin in pharmaceutical formulations is very important with regard to the standardization and to the monitoring of the stability of such formulation. The influence of two analytical parameters, the pH and concentration of buffer, were studied. Under an optimum condition (20 mM phosphate buffer, pH 2.2), a mixture containing ciprofloxacin and enrofloxacin as test compounds can be completely within 30 s. A good linear fit curve with the concentration of 2.0 to 20.0 mg/L for ciprofloxacin and enrofloxacin was obtained, with regression coefficients of 0.9985 and 0.9984, respectively. The LODs and LOQs of both analytes were 0.50 and 2.0 mg/L, respectively. Precisions in terms of relative standard deviation of the migration and peak area of ciprofloxacin and enrofloxacin were less than 1.0% and 3.0%, respectively. The range of mean recoveries of ciprofloxacin and enrofloxacin by the proposed method was 93-98%, and 90-95%, respectively. The proposed method proved to be rapid, and reliable for the determination of ciprofloxacin and enrofloxacin.

Keywords: Electrophoresis chip; Fluorescence detection; Ciprofloxacin; Enrofloxacin