7.1.2. Determination of glucosamine using capillary zone electrophoresis with conductivity contactless detection

A novel CE method with contactless conductivity detection suitable for the determination of glucosamine and K^+ in pharmaceuticals was devised. Under the optimum conditions (aqueous 30 mM acetate buffer of pH 5.2 as the background electrolyte; voltage 30 kV; 25 °C) glucosamine (migrating as glucosaminium cation) was well separated from K^+ that could occur in the dosage forms as excipient. The CE analysis was performed in fused-silica capillaries (50 μm i.d., 75 cm total length, 27 cm to detector) and the separation took < 3 min. The calibration graphs were linear for both glucosamine (100 - 300 μg/ml; r^2 = 0.997) and K^+ (15 - 75 μg/ml; r^2 = 0.997) when using ethanolamine (100 μg/ml) as the internal standard. The LOD values (S/N = 3) were 9.3 μg/ml for glucosamine and 2.9 μg/ml for K^+. The method was applied to the assay of glucosamine content in various dosage forms. Intermediate precision evaluated by determining the content of glucosamine in a single formulation on 3 consecutive days was characterized by RSD 2.35% (n=15). Acceptable accuracy of the CE method was confirmed by the added/found glucosamine recovery experiments (recoveries 94.6-103.3%) and by statistical comparison of the results attained by the proposed CE and a reference HPLC method.