

Determination of organic acids of low molecular weight and phosphate in soil by capillary electrophoresis

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Capillary zone electrophoresis with indirect UV detection at 254 nm was found to be suitable for the determination of organic acids and phosphate in aqueous extracts of soil. The best support electrolyte solution was found to be 10mM p-hydroxybenzoic acid with 0.5mM tetradecyltrimethylammonium bromide to reverse electroosmotic flow. This methodology was tested with 9 analytes found in soils: acetate, citrate, formate, phosphate, lactate, oxalate, pyruvate, succinate, and tartrate. The results obtained show that the methodology is adequate for most of the analytes. The sensitivity to oxalate and citrate was low, and the high concentrations of major inorganic anions interfered with the detection of the former. The methodology was applied to the analysis of aqueous extracts of soil samples. Formate, phosphate, lactate, and acetate anions were detected in most of the samples.