

Elimination of metal interference in the determination of fluoride ion by non-suppressor type ion chromatography

ABSTRACT

A simple method has been developed to eliminate metal interferences in the ion-chromatographic determination of fluoride ion in aqueous solutions. Negative interferences become appreciable on 0.2-mM F⁻ at 0.01 to 0.02 mM of Al(III), Ce(IV), La(III), Y(III), Ce(III) and Pb(II); and at 0.25 mM of Ca(II). The interference from Cd(II), Co(II), Fe(II) and Ni(II) is insignificant at 5.0-mM metal for 5.0-mM F⁻. By alkalifying F⁻ solutions at pH 12.3, the metal interference can be eliminated up to the concentrations of 0.25-mM Al(III), La(III) and Y(III); 1.0-mM Ce(IV); 2.5-mM Ce(III); and 5.0-mM Pb(II), Cd(II), Co(II), Fe(II) and Ni(II). The Ca(II) interference cannot be eliminated. The pretreatment enables determination of 0.2- to 5.0-mM F⁻ in presence of 0.25-mM Al(III) or La(III) with coefficient-of-variations of 1.99 to 6.20%.

Keyword: Alkali pretreatment; Fluoride analysis; Ion chromatography; Metal interference