Use of Weak ion Association in The Separation of Inorganic Anions By Capillary Electrophoresis With Specific Application To Simultaneous-Trace Determination Of Bromate and Iodate in Drinking Water

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ABSTRACT

. In this work weak ion association was used to effect selectivity and detection of inorganic anions with environmental or health significance by capillary electropheresis, CE. Tetrabutylammonium ion was used as a pairing anion to separate mixtures containing closely or co-migrating inorganic anions at pHs 3.8 and pH 7. Despite taking a longer analysis time, better resolution is achieved at pH 7 than 3.8. Trace level of bromate and iodate present in drinking water were determined after online pre-concentration by field enhanced sample injection (FESI) technique. Consequently an internal standard (SCN-) was employed, which entailed the use of tetrabutylammonium ion as a pairing cation to resolve the internal standard from a co-migrating broad peak. The LODs (S/N = 3) were 7.8 x 10-10 M (10 ppb) and 1.2 x 10-9 M (0.21 ppb) for bromate and iodate, respectively. The method was subsequently used to determine bromate and iodate levels in drinking water. KEY WORDS: Weak ion association, Selectivity, Capillary electrophoresis, Tetrabutylammonium ion, Bromate, Iodate, Drinking water