# Determination of bromate ion in drinking water by capillary zone electrophoresis with direct photometric detection

## Author(s)

Toshio Takayanagi*,
Makoto Ishida,
Julius Mbuna,
Rim Driouich,
Shoji Motomizu

## Abstract

Bromate ion in drinking water was determined by capillary zone electrophoresis (CZE) with direct photometric detection. Bromate ion in the sample solution was introduced and concentrated into the capillary by electrokenetic injection for 50 s at −10 kV. Electrophoretic separation was made at an applied voltage of −25 kV and bromate ion was detected at wavelength 193 nm, at which the baseline was stabilized with less UV-absorbing acidic phosphate buffer. Bromate ion was detected within 5 min in the electropherogram. By increasing the electric conductivity in the migrating solution with 10 mM $Na_2SO_4$, a limit of detection (LOD) of $9 \times 10^{-10}$ M (0.1 μg/L $BrO_3^-$) was achieved. The proposed method was applied to the analysis of tap water and river water samples, but bromate ion was not detected. Because the practical samples contain relatively large amount of foreign ionic substances, the tap water sample was diluted to avoid the matrix ions. Bromate ion added in a tap water at the concentration of $8 \times 10^{-8}$ M was quantitatively recovered by diluting it 1/10.

## Keywords

Bromate ion;
Capillary zone electrophoresis;
Transient isotachophoresis;
Tap water;
River water