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Simultaneous Determination of Sodium Benzoate and p-Hydroxybenzoate Esters Using High-performance Capillary Electrophoresis

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Abstract

A rapid and simple capillary zone electrophoresis (CZE) method was developed for the simultaneous determination of sodium benzoate, potassium sorbate, sodium dehydroacetate, and the parabens, i.e. ethyl, n-propyl, and n-butyl p-hydroxybenzoic esters, which are used in several processed foods as preservatives. The compounds were well separated from each other on a fused silica capillary utilizing a 20 mM sodium tetraborate buffer (pH 9.65) and UV detection at 200 nm. The total analysis time was less than seven minutes per sample. Furthermore, sodium benzoate and the five parabens, i.e. ethyl, isopropyl, n-propyl, isobutyl and n-butyl p-hydroxybenzoic esters, permitted as food preservatives in Japan were well separated from each other in less than eight minutes using a micellar electrokinetic capillary electrophoresis (MEKC) method. Concentrations of sodium benzoate and n-butyl paraben in several soft drinks were determined using the CZE method and the levels of sodium benzoate and n-butyl paraben in the samples were in good agreement with those determined by the HPLC procedure.