Analysis of Water-soluble Vitamins in Biopharma Raw Materials by Electrophoresis

Micro-chip based electrophoresis represents a promising tool for application in the analysis of raw materials in biologics since analysis times can be reduced to seconds and high separation efficiencies can be achieved using extremely low volume samples, minimal reagent consumption and waste generation, low cost/disposability, portability and ease of operation. Therefore, the integration of this detection mode within the analytical system is rather simple. Furthermore, the background noise is significantly reduced leading to lower detection limits than the conventional contact conductivity detection.

Vitamins are present at very low concentrations in biopharma raw materials and are usually determined using HPLC and CE methods [3]. Electrophoresis micro-chips are a very good alternative to these techniques due to the shorter analysis time and yet very good resolution, among others.

**RESULTS**

Electropherograms showing the separation of vitamins in a standard solution of B_{12}, B_{6}, pantothenic acid and biotin (10 µM each) after spiking B_{12} (a), B_{6} (b), pantothenic acid (c), or biotin (d). Run buffer: 30 mM Lactic acid (pH 2.6). Micro-chip channels: effective length 3.7 cm, depth 45 µm, width 50 µm. Injection potential: 0.8 kV for 1.5 s. Separation potential: 1.2 kV.

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