

Effects of organic solvent and cationic additive on Capillary electrophoresis of peptides

ABSTRACT

Capillary electrophoresis (CE) of nine peptides namely, bradykinin, bradykinin fragment 1-5, substance P, Arg8 -vasopressin, luteinizing hormone-releasing hormone (LHRH), bombesin, leucine-enkephalin, methionine-enkephalin and oxytocin were carried out using 0.5 % and 1.0 % formic acid (FA) as the separation buffers, added with acetonitrile (ACN) and triethylamine (TEA) as an additive at low pH. The electrophoretic behaviour of these peptides was examined at different concentration of TEA (0, 10, 20, 30, 40 and 50 mM), and ACN (30, 40, 50, 60, 70 %) at their respective measured final pH. The results showed that all nine peptides were fully resolved with addition of 10 – 20 mM TEA. Peak efficiency was improved significantly by increasing TEA concentration up to 40 mM where 800 000 m⁻¹ was obtained. Without TEA, the closely related enkephalins were co-migrating. Interestingly, by addition of as little as 5 mM TEA has sufficient to separate them almost at baseline. Increasing ACN to 40 % has shortened the analysis time by ca. 1 min. However, further increase of ACN can cause peak broadening and current instability.