**Stepwise injection potentiometric determination of caffeine in saliva using single-drop microextraction combined with solvent exchange**

1. Timofeeva, K. Medinskaia, L. Nikolaeva, D. Kirsanov, A. Bulatov

**Abstract**

A flow potentiometric method for determination of caffeine in saliva is suggested. This task is important for non-invasive assessment of drug metabolizing system activity in hepatocytes. In the current study, stepwise injection analysis (SWIA) was successfully combined with single-drop liquid microextraction (SDLME) and solvent exchange procedure. The method is based on the caffeine SDLME with subsequent solvent evaporation and dissolution of analyte in sulfuric acid followed by potentiometric detection using poly(vinyl chloride) membrane electrode containing potassium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate as electroactive component. SDLME was employed for elimination of interfering matrix effects of saliva and caffeine metabolites such as theophylline, theobromine and paraxanthine. A linear range of 10(-5)-10(-2)M was established for caffeine with detection limit at 6×10(-6)M. The sample throughput was 6 samples h(-1). The proposed method was successfully applied to the determination of caffeine in saliva and the analytical results agreed well with the results obtained with reference HPLC method.