

Determination of Matrine Alkaloids in Human Urine by Hollow Fiber-based Microextraction Coupled to HPLC

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A sensitive quantitative method for the determination of matrine alkaloids in human urine was developed based on hollow fiber liquid-phase microextraction (HF-LPME) combined with HPLC. The influence of the different factors on the HF-LPME efficiency including the pH and ion strength of the donor solution, the pH of the acceptor solution, stirring rate and extraction time were examined. The best HF-LPME conditions were as follows: 1-octanol impregnated in the pores of the hollow fiber, 100 mmol/L of H₃PO₄ at pH 1.50 as the acceptor solution injected into the lumen of the hollow fiber, 1 mol/L NaOH used to adjust the pH of the donor solution, stirring rate of 600 rpm and extraction time of 60 min. The calibration curve was linear over the range of 0.25–5.00 µg/mL for both matrine and sophocarpine in human urine sample, with a correlation coefficient of 0.987 and 0.991, respectively. The detection limits (S/N = 3:1) for matrine and sophocarpine were 0.025 and 0.042 µg/mL, respectively. The LPME method was applied successfully to the analysis of matrine and sophocarpine in real urine samples.