Supporting Information

Nanomaterial-Assisted Thread-Based Isotachophoresis with on-Thread Solute Trapping

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Video S1. Electromigration of alkaloids on a 5-cm nylon thread with a nylon knot tied at the position of 4-cm from the inlet reservoir. Sample: 2 µL of alkaloids standard mixture solution containing 5 µg mL^{-1} of each of coptisine, berberine, and palmatine. LE was a 20 mM potassium acetate solution in 0.1 % PVP (pH = 5.0) and TE was a 20 mM β-alanine solution in 0.1% PVP (pH = 4.7). TB-ITP experiment was performed in cathodic mode with a constant current of 200 µA. The speed has been increased 64X.

Video S2. Electromigration of alkaloids on 5-cm nylon thread with a BSA/GO-functionalized nylon knot tied at the position of 4-cm from the inlet reservoir. The experimental conditions were similar to those described in Video S1.

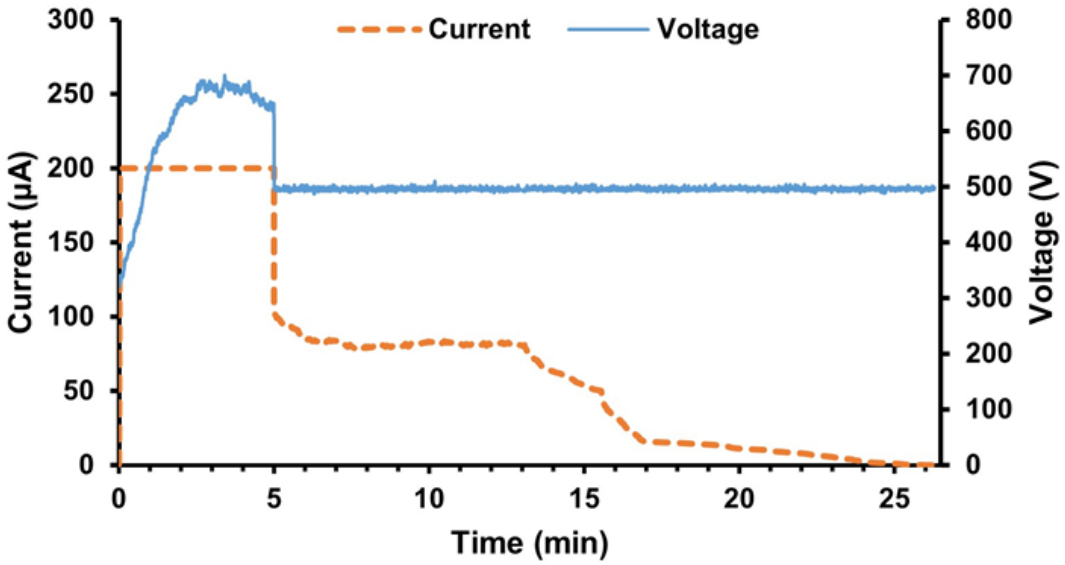

Figure S1. Voltage and current changes versus TB-ITP time. A constant current was applied at 200 µA (from 0 to 5 min) and changed to constant voltage at 500 V (from 5 min till dryness of the thread).

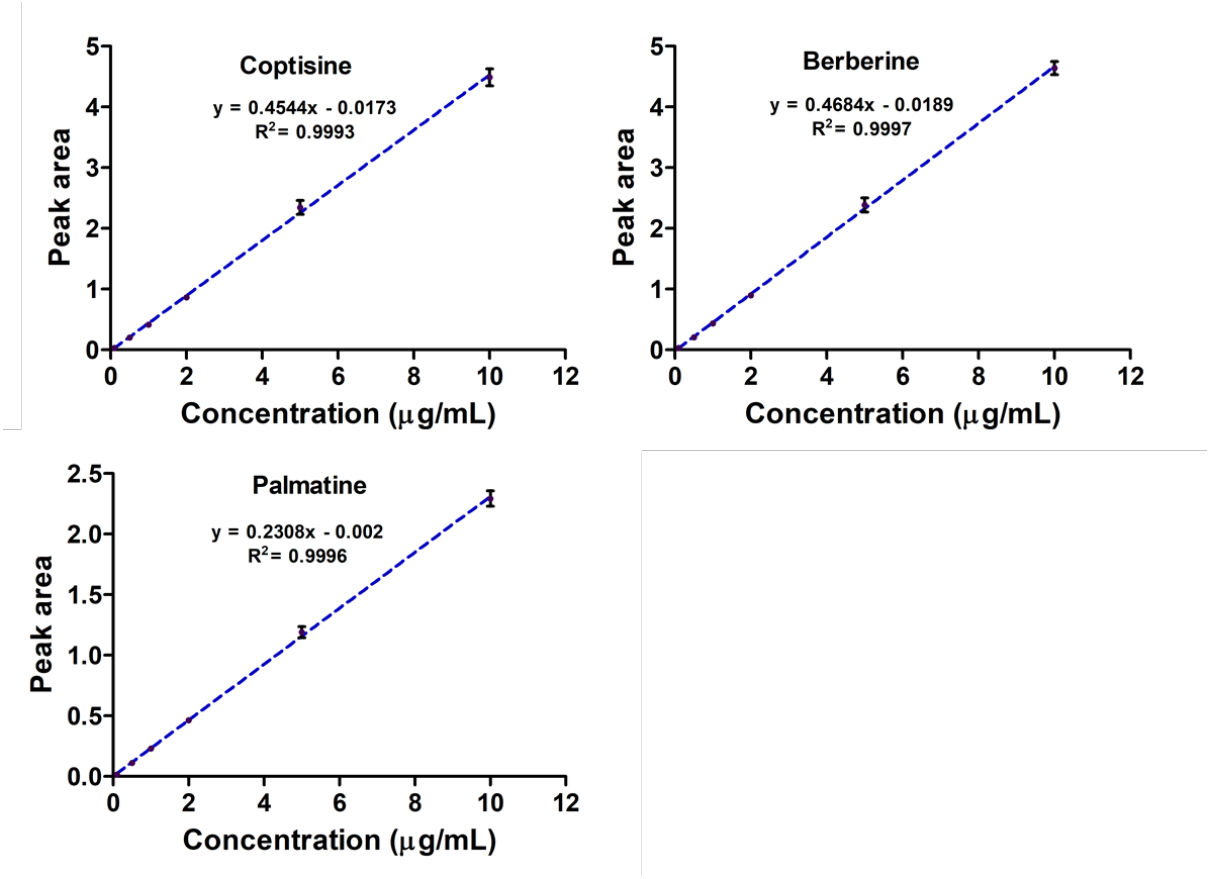

Figure S2. Calibration curves and linear regressions of three alkaloids solutions obtained by direct HPLC-UV analysis in the range of 0.1 - 10 µg/mL.

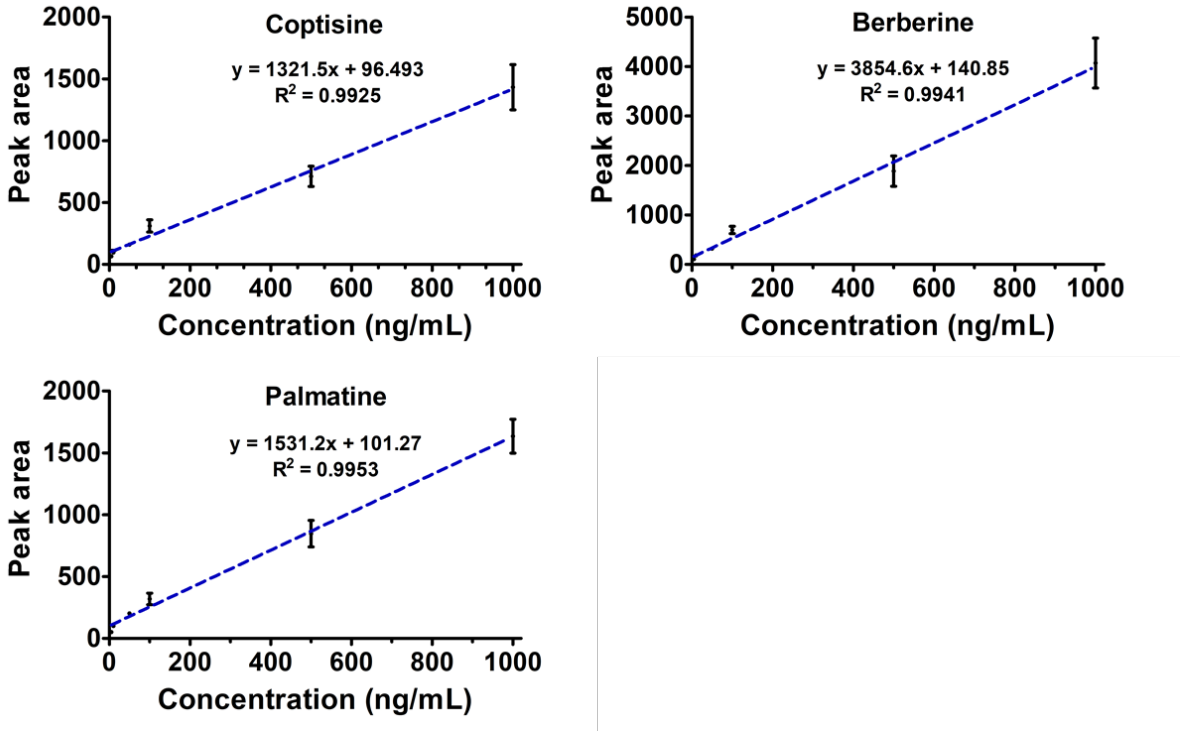

Figure S3. Calibration graphs and regression equations of three model alkaloids acquired by the developed TB-ITP-DESI-MS strategy with a BSA/GO coated trapping knot.

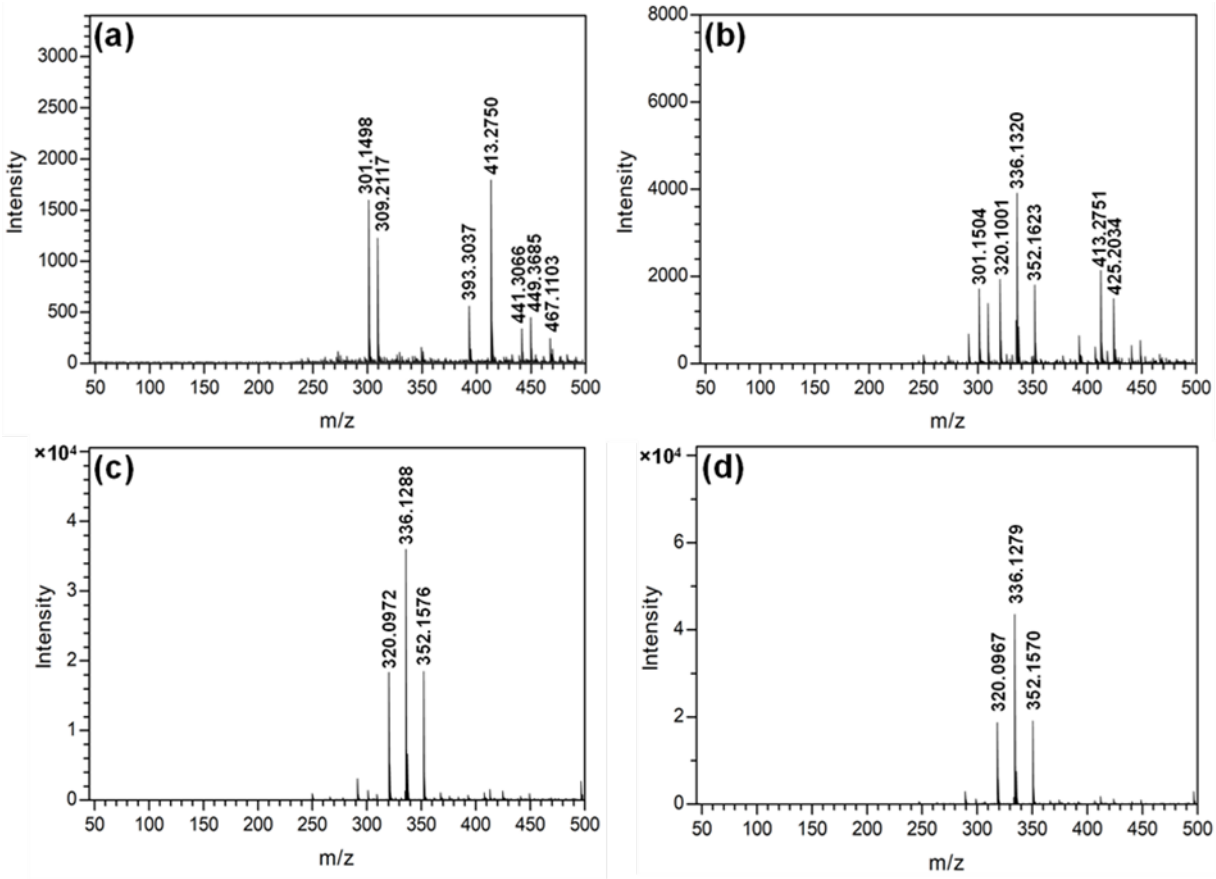

Figure S4. MS spectra obtained using direct DESI-MS analysis of a urine sample (a) and the fortified (5 μL, 0.1 μg/mL) urine sample (b), and MS spectra for the analysis of the fortified urine sample with sample volumes of 5 μL (c) and 10 μL (d) using the TB-ITP-DESI-MS method.