**Supporting Information**

**Fabrication of a Novel Electrochemical Sensor Based on Tin Disulfide/Multi-walled Carbon Nanotubes-modified Electrode for Rutin Determination in Natural Vegetation**

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Fig. S1 TEM images of SnS2 and SnS2/CNTs:(A) 4h-SnS2, (B) 6h-SnS2, (C) 8h-SnS2, (D) 4h-SnS2/CNTs.

Fig. S2 Electrochemical responses of 4h-SnS2/CNTs composite with different modification amounts to rutin.

Fig. S3 DPV curve of blank solution.

Table S1 Elemental weight distribution and atomic content of 4h-SnS2 and 4h-SnS2/CNTs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Substance** | **Element** | **S** | **Sn** | **C** | **Sum** |
| 4h-SnS2 | Weight (%)  | 35.46 | 62.52 | 0 | 100.00 |
| Atom (%)  | 65.46 | 31.18 | 0 | 100.00 |
| 4h-SnS2/CNTs | Weight (%)  | 25.87 | 44.03 | 30.11 | 100.00 |
| Atom (%)  | 21.90 | 10.07 | 68.03 | 100.00 |

**The HPLC method**

A Gas chromatograph method was applied (Liao et al., 2015). The residues of samples were extracted directly with 70% ethanol solution and were determined by Gas Chromatograph with pulsed flame-photometric detection (Waters ACQUITY Arc /2489UV). The GC analytical column was C18 column (250 mm× 4.6 mm, 5 μm). The experiment conditions were as follows: the injection volume was 10 µL, the mobile phase was 2 % HCOOH-CH3OH (6:4, v/v), and the flow rate was 1.0 mL/min. The detector was a TUV detector, the detection wavelength was 360 nm, and the column temperature was 20 ℃. The rutin content was calculated by integrating the areas of the separated chromatographic peaks.

Under the GC conditions, the concentration of plants samples was diluted. The good linearity for the rutin was achieved at the concentration range of 0.0 ~ 200.0 μg/mL. The average recoveries were 96.0 % ~ 116.9 %, with relative standard deviations of 0.4 % ~ 3.7 % at the three levels of 10.0, 50.0 and 100.0 μg/mL.

**References**

Liao, J., Qu, B., Da, L., Zheng, N., 2015. New method to enhance the extraction yield of rutin from Sophora japonica using a novel ultrasonic extraction system by determining optimum ultrasonic frequency . Ultrasonics Sonochemistry, 27, 110-116. <https://doi.org/10.1016/j.ultsonch.2015.05.005>.