SUPPORTING INFORMATION

Development of a colorless *Centella asiatica* (L.) Urb. extract using a natural deep eutectic solvent (NADES) and microwave-assisted extraction (MAE) optimized by response surface methodology

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List of supporting information

1. *Centella asiatica* (L.) Urb. the material used for extraction experiments

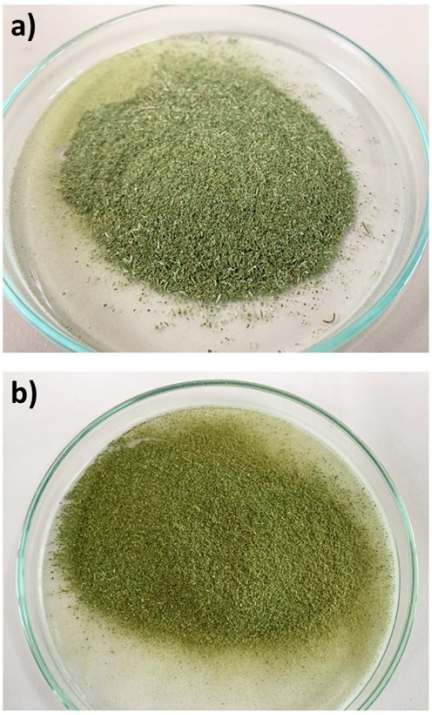

Fig. S1 The appearance of ground *Centella asiatica* (L.) Urb. powder (a) and its sieved (0.5 mm) powder (b)

2. HPLC-UV analysis

The chromatograms of authentic MS and AS and extracts were demonstrated (Figure S2). The NADES (ACW60) was also analyzed to ensure that its composition does not interfere with the analysis.

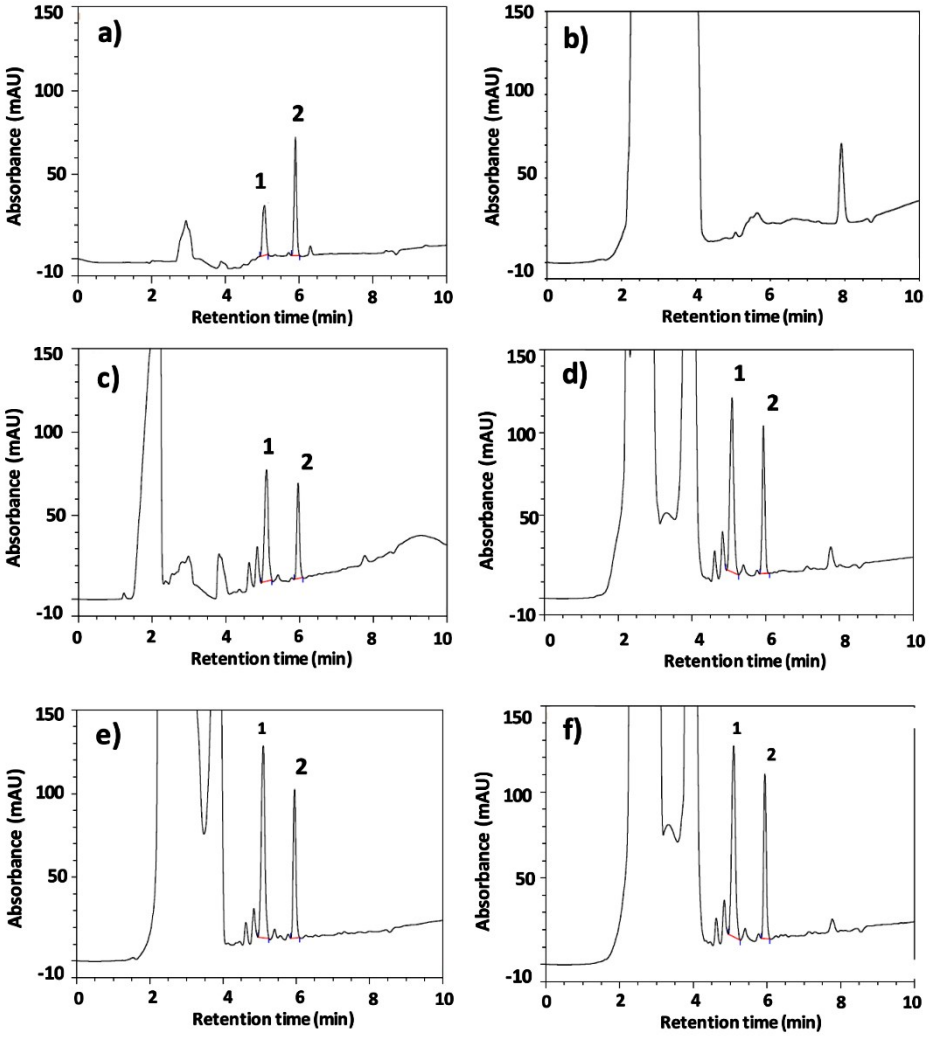

Fig. S2 The HPLC chromatogram of standard MS and AS (a), indicated by **1** and **2**. The chromatogram of *Centella asiatica* free NADES (ACW60) was analyzed as well (b). The MS and AS peaks in the extracts prepared using 80% (v/v) EtOH, ACW60, AGW60, and AMW60 were showed c, d, e, and f, respectively.

The analytical recovery of the HPLC was validated for accuracy ensuring. *Centella asiatica* (L.) Urb. was extracted with AMW60 with MAE (30 s irradiation time, 300 W microwave power, and 0.1 g/20 mL LS ratio). The resultant extract was diluted in 80% ethanol, and then the authentic MS and AS were individually spiked for the final concentration of 5 and 20 µg/mL. The concentration of MS

and AS in the spiked and non-spiked samples were determined. The recovery (%) was calculated using the following equation.

$$Recovery\ (\%) = \frac{Concentration\ in\ spiked\ sample - Concentration\ in\ non-spiked\ samples}{theoretical\ concentration\ spiked}\ x\ 100$$

Table S1 Recovery of MS and AS analysis using HPLC-UV method

Theoretical concentration spiked (µg/mL)	Measured concentration (µg/mL)		Recovery (%)	
	MS	AS	MS	AS
0	304±8.71	189±8.33	-	-
5	308±0.486	194±0.536	97.2	98.7
20	323±1.96	208±1.88	99.0	94.8

3. Color appearance of *Centella asiatica* (L.) Urb. extracts

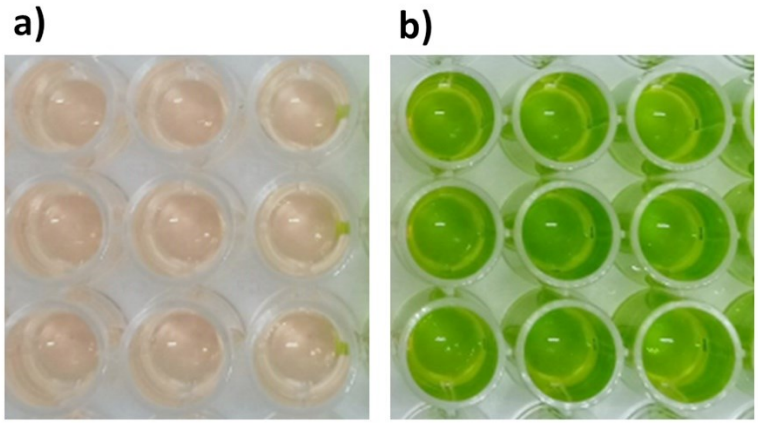

Fig. S3 The appearance of extract using NADES (a) and 80% (v/v) ethanol (b) as solvents

4. The effect of extraction parameters on the yields

Table S2 The preliminary study of screening MAE parameters

Time (s)	Microwave power (W)	LS ratio (mL/g)	MS (mg/g dry weight)	AS (mg/g dry weight)
10	300	10	18.7±0.05	10.9±0.04
20	300	10	19.0±0.04	11.2±0.05
30	300	10	18.9±0.02	11.2±0.01
40	300	10	18.2±0.02	10.7±0.02
50	300	10	19.2±0.04	11.3±0.01
10	180	10	18.7±0.05	10.9±0.04
10	300	10	17.4±0.09	10.1±0.01
10	450	10	16.3±0.02	9.53±0.00
10	600	10	20.6±0.01	11.9±0.02
10	850	10	17.1±0.04	10.0±0.01
10	300	20	18.7±0.05	10.9±0.04
10	300	30	19.3±0.01	11.3±0.02
10	300	40	11.6±0.03	6.89±0.00
10	300	50	17.7±0.01	10.4±0.01
10	300	60	12.9±0.03	7.50±0.03