

Supplementary Materials

An Index for Quantitative Evaluation of the Mixing in Ethanol Precipitation of Traditional Chinese Medicine

Yanni Tai ^{1,2†}, Jingjing Pan ^{1,2†}, Haibin Qu ^{1,2} and Xingchu Gong ^{1,2*}

¹ Pharmaceutical Informatics Institute, College of Pharmaceutical Sciences, Zhejiang University, Hangzhou 310058, China; taiyn@zju.edu.cn (Y.T.); 21819006@zju.edu.cn (J.P.); quhb@zju.edu.cn (H.Q.)

² Innovation Center in Zhejiang University, State Key Laboratory of Component-Based Chinese Medicine, Hangzhou 310058, China

* Correspondence: gongxingchu@zju.edu.cn

† Yanni Tai and Jingjing Pan contributed equally to this work

Table S1 WMR values, total solid removal rate, lobetyolin retention rates on different addition modes.

Addition modes	WMR value (%)	Total solid removal rate (%)	Retention rate of lobetyolin (%)
Concentrate added dropwise into ethanol solution	76.3±2.05	60.4±1.97	70.2±3.35
	64.7±2.38	57.3±5.36	56.9±1.72
	65.4±1.85	58.6±6.43	56.3±1.75
Ethanol solution added dropwise into concentrate	100.5±3.17	56.8±2.77	79.6±0.82
	93.5±1.70	58.8±4.23	77.5±2.27
	87.1±1.63	59.7±8.01	72.3±2.30

The results are expressed as mean ± standard deviations, $n = 3$.

Table S2 WMR values under different stirring speeds (200, 300, 400, and 500 rpm) and different total solid content of the concentrate (45%, 55%, and 60%) on stirring devices.

Total solid content (%)	Stirring speed (rpm)			
	200	300	400	500
45	85.5±4.55	100.5±6.63	105.7±3.63	98.0±2.08
55	56.8±4.12	62.6±3.56	73.6±3.47	77.4±2.23
60	20.8±4.75	31.6±2.70	34.3±6.84	38.2±2.30

The results are expressed as mean ± standard deviations, $n = 3$.

Table S3 WMR values, total solid removal rate, lobetyolin retention rates under different concentrate flow rates on the micromesh mixer.

Concentrate flow rate (mL/min)	WMR value (%)	Total solid removal rate (%)	Retention rate of lobetyolin (%)
40	98.9±6.42	57.1±0.88	83.8±2.90
60	105.7±5.11	54.0±0.70	89.7±0.88
80	105.2±4.41	51.2±2.82	91.0±2.47

The results are expressed as mean \pm standard deviations, $n = 3$.

Table S4 WMR values under different membrane pore sizes on a membrane dispersion micromixer.

Membrane pore size (mm)	10	18	23	15
WMR value	42.4 \pm 1.81	71.8 \pm 6.11	91.4 \pm 3.53	93.5 \pm 5.17

The results are expressed as mean \pm standard deviations, $n = 3$.

Table S5 WMR values under different mixing chamber widths on a membrane dispersion micromixer.

Mixing chamber width (mm)	1.0	2.0	3.0	4.0
WMR value	91.4 \pm 3.53	84 \pm 0.72	65.1 \pm 4.31	53.5 \pm 3.51

The results are expressed as mean \pm standard deviations, $n = 3$.

Table S6 WMR values under different mixing chamber depths on a membrane dispersion micromixer.

Mixing chamber depth (mm)	0.5	1.0	1.5	2.0
WMR value	91.4 \pm 3.53	73.1 \pm 4.26	72.6 \pm 3.66	70.3 \pm 3.08

The results are expressed as mean \pm standard deviations, $n = 3$.

Table S7 WMR values under different concentrate flow rates, ECR on a membrane dispersion micromixer.

Flow rate (mL/min)	RCR (g/g)		
	1.0	1.5	2.0
15	–	48.4 \pm 0.19	51.2 \pm 1.67
30	68.8 \pm 1.64	69.0 \pm 1.16	71.4 \pm 2.30
45	–	87.1 \pm 1.01	84.1 \pm 1.46
60	103.1 \pm 1.94	103.8 \pm 3.29	102.6 \pm 2.63
75	–	103.5 \pm 4.98	–
90	99.4 \pm 2.65	–	–
120	97.3 \pm 2.70	–	–

The results are expressed as mean \pm standard deviations, $n = 3$. “–” means these factor levels were not be measured.