

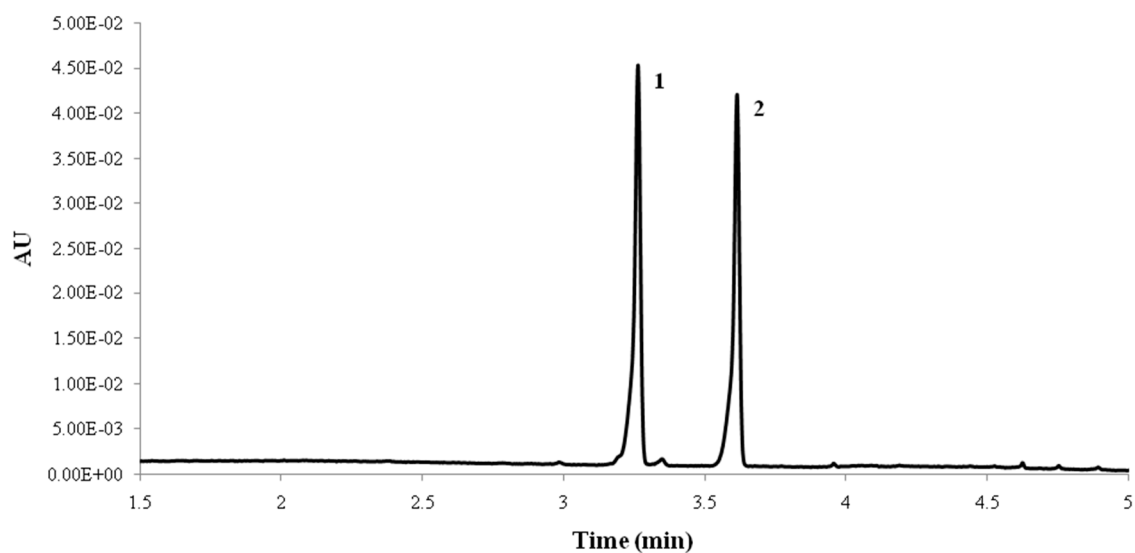


Figure S1. UV-Vis chromatogram ($\lambda = 280$ nm) of the 2 major capsinoids present in peppers.
Peak assignment: (1) Capsiate (CTO); (2) Dihydrocapsiate (DHCTO).

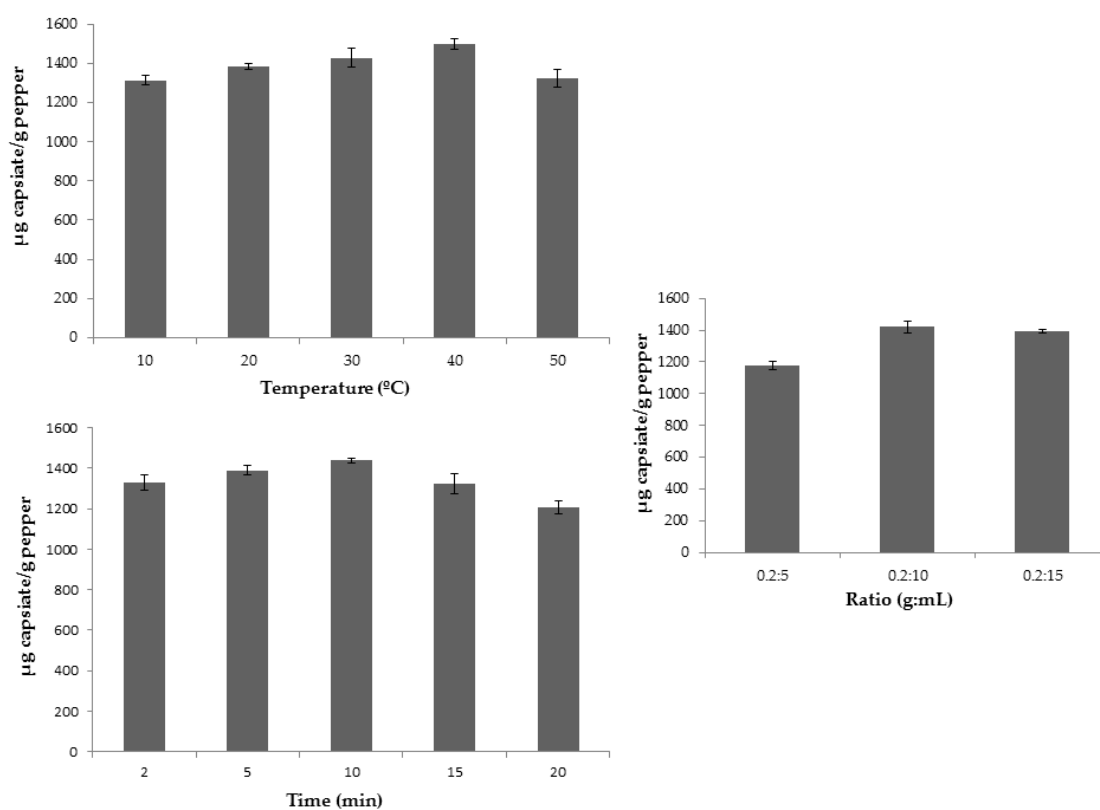


Figure S2. Previous study to obtain the extraction conditions in the selection of the optimal extraction solvents.

Table S1. Statistical Mixture Design of Simple Centroid Extended Model for ultrasound-assisted extraction.

Experiments	Acetone	Methanol	Ethyl Acetate	Capsiate ($\mu\text{g g}^{-1}$)
1	1	0	0	982.3798
2	0	1	0	859.2195
3	0	0	1	977.2840
4	0.5	0.5	0	1033.3243
5	0	0.5	0.5	1082.5323
6	0.5	0	0.5	992.0915
7	0.66	0.17	0.17	1024.6064
8	0.17	0.66	0.17	1045.8039
9	0.17	0.17	0.66	1019.2248
10	0.33	0.33	0.33	1060.0510

Table S2. Statistical Mixture Design of Simple Centroid Extended Model for microwave-assisted extraction.

Experiments	Methanol	Ethanol	Acetone	Capsiate ($\mu\text{g g}^{-1}$)
1	1	0	0	1255.7001
2	0	1	0	1083.9585
3	0	0	1	1124.2505
4	0.5	0.5	0	1169.6373
5	0	0.5	0.5	1202.7151
6	0.5	0	0.5	1026.3764
7	0.66	0.17	0.17	1289.5222
8	0.17	0.66	0.17	1157.8290
9	0.17	0.17	0.66	1154.5725
10	0.33	0.33	0.33	1169.5619

Table S3: Box-Behnken experimental design matrix with coded variables.

Run	Factors				Capsiate (µg/g)	
	Time (min)	Temperature (°C)	pH	Ratio (g:mL)	UAE	MAE
1	0	0	0	0	1142.0545	1335.5773
2	0	1	0	1	1120.8040	1356.1753
3	0	1	-1	0	1157.5197	1369.7249
4	-1	1	0	0	1167.8894	1388.8615
5	1	0	-1	0	1153.0245	1341.5354
6	0	-1	0	1	1181.9430	1346.2919
7	0	-1	1	0	1188.0619	1380.2474
8	-1	-1	0	0	1209.4128	1419.4090
9	1	-1	0	0	1154.2412	1394.2541
10	1	0	0	-1	1121.7478	1294.0196
11	0	0	-1	-1	1144.1691	1449.6367
12	0	0	0	0	1145.7680	1423.8285
13	0	0	1	-1	1105.8330	1361.7313
14	1	0	1	0	1150.3841	1360.1833
15	1	1	0	0	1168.4172	1386.4650
16	0	-1	-1	0	1145.7682	1360.1864
17	0	1	0	-1	1126.5295	1432.5308
18	0	-1	0	-1	1135.6231	1380.0148
19	0	1	1	0	1131.5028	1376.5305
20	0	0	1	1	1177.4747	1437.1724
21	-1	0	1	0	1142.3949	1469.0884
22	-1	0	0	-1	1129.5525	1327.4946
23	-1	0	-1	0	1140.6957	1432.9397
24	0	0	-1	1	1186.9691	1422.6847
25	0	0	0	0	1142.0927	1440.9404
26	-1	0	0	1	1128.3277	1426.3725
27	1	0	0	1	1159.5555	1405.2727

Table S4. Study of the precision of the methods developed in terms of repeatability (1-10) and intermediate precision (1-30) for ultrasound-assisted extraction (UAE) and microwave-assisted extraction (MAE).

Experiment number	$\mu\text{g capsiate/g pepper}$	
	UAE	MAE
1	1294.74	1382.66
2	1278.09	1332.29
3	1311.83	1384.77
4	1334.77	1470.30
5	1322.17	1398.40
6	1345.84	1387.07
7	1332.95	1369.17
8	1313.93	1402.37
9	1325.99	1401.73
10	1340.03	1382.65
11	1341.96	1369.50
12	1344.64	1460.76
13	1269.96	1360.87
14	1356.11	1368.80
15	1324.68	1328.31
16	1324.98	1453.77
17	1304.00	1354.03
18	1256.11	1342.44
19	1303.34	1389.74
20	1309.15	1417.79
21	1304.55	1344.97
22	1367.16	1321.62
23	1304.08	1397.46
24	1351.53	1430.55
25	1326.50	1278.35
26	1343.54	1449.09
27	1292.53	1343.88
28	1267.23	1416.04
29	1301.80	1238.69
30	1304.48	1276.48
Repeatability	Average = 1320.03 $\mu\text{g/g}$	Average = 1391.14 $\mu\text{g/g}$
	Standar deviation = 21.06	Standar deviation = 34.49
	Error = 1.60%	Error = 2.48%
Intermediate precision	Average = 1316.62 $\mu\text{g/g}$	Average = 1375.15 $\mu\text{g/g}$
	Standar deviation = 27.38	Standar deviation = 54.45
	Error = 2.08%	Error = 3.96%