Supplement

Microwave-Assisted Transesterification of *Argemone mexicana* Oil: Parametric and Kinetics Study

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Shimadzu QP-2010 Ultra was utilized to record the GC-MS of oil. Colum Rxi-5ms of 30 m length, 0.25 µm thickness, and 0.25 mm diameter was used. GC programming with 40 °C column oven temperature, 300 °C Injection temperature, 50:1 split ratio, flow control mode 36.1 cm s^{-1}, purge flow 3.5 mL min^{-1}, column flow 1 mL min^{-1}. Oven ramp: 40 °C holds for 4.0 min, ramp function 20 °C/min to 310 °C holds for 5.0 min with total run time of 22.5 min. MS consist of Ion source temperature: 200 °C, Interface temperature: 310 °C, Solvent cut time: 0.0 min, Detector voltage: 0.8 kV, Acquisition mode: Scan mode, Scan speed: 3333, Event time: 0.30 s, Starting m/z: 45 to 1000 m/z.

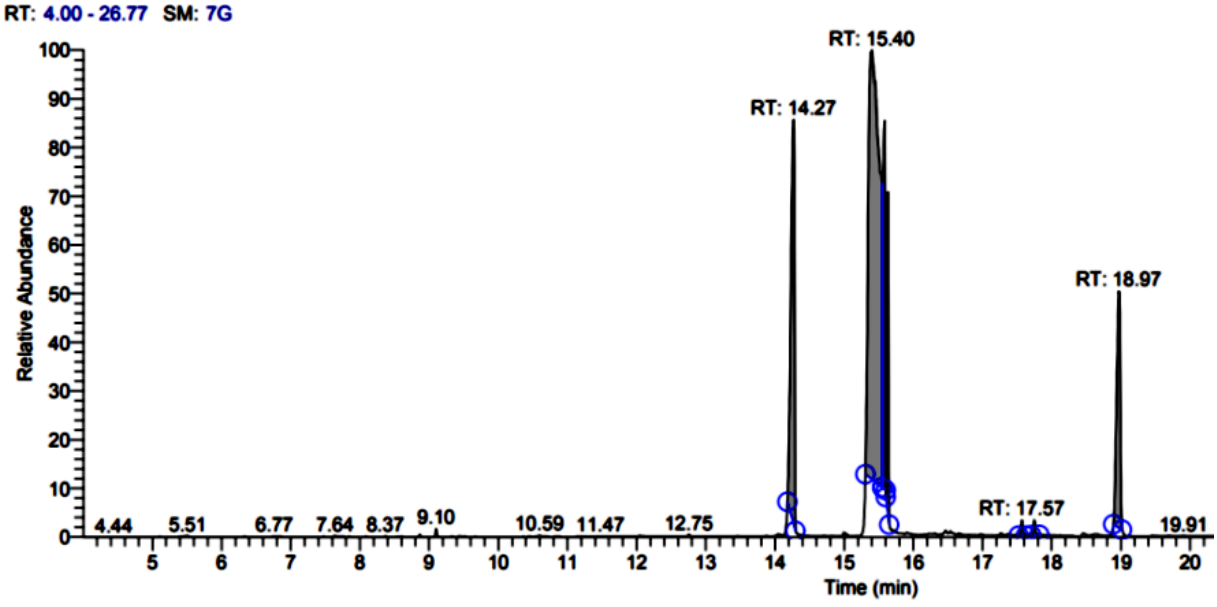

Fig. S1 GC-MS of *Argemone mexicana* oil

Table S1 GC-MS peak table of *Argemone mexicana* oil

Retention time (min)	Peak area	Area%	Peak height
14.27	5718339605.73	17.60	1546902604.81
15.40	18757686860.47	57.74	1643219623.81
15.59	3121422483.74	9.61	1410197412.71
15.63	1413613260.91	4.35	1220876941.21
17.57	102921685.96	0.32	59924851.82
17.75	109913246.73	0.34	58479531.82
18.97	3264285922.89	10.05	904935204.92

Table S2 Differential analysis of data at 50 °C for transesterification of *Argemone mexicana* oil

Time, min	BD, g	Yield, %	BD, mol	BD concentration mol m^{-3}	Oil mol reacted	Oil unreacted, mol	C_{oil} mol mL^{-1}	d[Ca]/dt mol m^{-3} min^{-1}	ln(−d[Ca]/dt) mol m^{-3} min^{-1}	ln[Ca], mol m^{-3}
0	0	0	0	0	0	0.005039282	0.000737			
0.25	2.1	46.54	0.007039	0.00102954	0.0023463	0.002692913	0.00039387	−0.013721	−6.5911	−7.839496
0.5	2.38	52.75	0.007977	0.00116682	0.0026592	0.002380064	0.00034811	−0.00018303	−8.605859	−7.962992
0.75	2.65	58.73	0.0088826	0.00129919	0.0029608	0.002078388	0.00030399	−0.00017649	−8.642227	−8.098527
1	2.89	64.05	0.0096871	0.00141685	0.0032290	0.001810231	0.00026477	−0.00015688	−8.760010	−8.236665
1.5	3.27	72.47	0.0109608	0.00160315	0.0036536	0.00138565	0.00020267	−0.0001242	−8.993625	−8.503950
2	3.56	78.90	0.0119329	0.00174532	0.0039776	0.001061628	0.00015527	−9.4783E-05	−9.263915	−8.770316
2.5	3.79	83.99	0.0127039	0.00185808	0.004234	0.000804645	0.00011769	−7.5173E-05	−9.495716	−9.047474
3	3.95	87.54	0.0132402	0.00193652	0.0044134	0.000625874	9.1541E-05	−5.2294E-05	−9.858622	−9.298726

Table S3 Differential analysis of data at 55 °C for transesterification of *Argemone mexicana* oil

Time min	BD, g	Yield, %	BD, mol	BD concentration mol m^{-3}	Oil mol reacted	Oil unreacted, mol	C_{oil} mol mL^{-1}	d[Ca]/dt mol m^{-3} min^{-1}	ln(−d[Ca]/dt) mol m^{-3} min^{-1}	ln[Ca], mol m^{-3}
0	0	0	0	0	0	0.005039282	0.000737			
0.25	2.39	52.96	0.0080111	0.00117172	0.0026703	0.002368891	0.00034648	−0.01562	−6.4617	−7.967697
0.5	2.75	60.94	0.0092178	0.00134821	0.0030726	0.001966656	0.00028764	−0.00023532	−8.354545	−8.153785
0.75	3.05	67.59	0.0102234	0.00149529	0.0034078	0.00163146	0.00023862	−0.0001961	−8.536866	−8.340644
1	3.3	73.14	0.0110614	0.00161786	0.0036871	0.001352131	0.00019776	−0.00016342	−8.719188	−8.528437
1.5	3.6	79.78	0.0120670	0.00176493	0.0040223	0.001016935	0.00014874	−9.8052E-05	−9.230013	−8.813326
2	3.89	86.21	0.0130391	0.00190711	0.0043463	0.000692913	0.00010135	−9.4783E-05	−9.263915	−9.196970
2.5	4.1	90.86	0.0137430	0.00201006	0.0045810	0.000458276	6.7028E-05	−6.8636E-05	−9.586688	−9.610403
3	4.22	93.52	0.0141452	0.00206889	0.0047150	0.000324198	4.7417E-05	−3.9221E-05	−10.14630	−9.956520

Table S4 Differential analysis of data at 60 °C for transesterification of *Argemone mexicana* oil

Time, min	BD, g	Yield, %	BD, mol	BD concentration mol m^{-3}	Oil mol reacted	Oil unreacted, mol	C_{oil} mol mL^{-1}	d[Ca]/dt mol m^{-3} min^{-1}	ln(−d[Ca]/dt) mol m^{-3} min^{-1}	ln[Ca], mol m^{-3}
0	0	0	0	0	0	0.005039282	0.000737			
0.25	2.61	57.84	0.0087486	0.00127958	0.0029162	0.002123081	0.00031052	−0.0170	−4.070	−8.077251
0.5	3.01	66.71	0.0100893	0.00147568	0.0033631	0.001676153	0.00024516	−0.00026147	−8.249184	−8.313618
0.75	3.3	73.14	0.0110614	0.00161786	0.0036871	0.001352131	0.00019776	−0.00018957	−8.570768	−8.528437
1	3.55	78.68	0.0118994	0.00174042	0.0039664	0.001072801	0.00015691	−0.00016342	−8.719188	−8.759846
1.5	3.84	85.11	0.0128715	0.0018826	0.0042905	0.000748779	0.00010952	−9.4783E-05	−9.263915	−9.119431
2	4.09	90.64	0.0137095	0.00200516	0.0045698	0.000469449	6.8662E-05	−8.171E-05	−9.412335	−9.586314
2.5	4.24	93.97	0.0142122	0.0020787	0.0047374	0.000301852	4.4149E-05	−4.9026E-05	−9.923161	−10.0279
3	4.34	96.18	0.0145474	0.00212773	0.0048491	0.00019012	2.7807E-05	−3.2684E-05	−10.32862	−10.4902

Table S5 Differential analysis of data at 65 °C for transesterification of *Argemone mexicana* oil

Time, min	BD, g	Yield, %	BD, mol	BD concentration mol m^{-3}	Oil mol reacted	Oil unreacted, mol	C_{oil} mol mL^{-1}	d[Ca]/dt mol m^{-3} min^{-1}	ln(−d[Ca]/dt) mol m^{-3} min^{-1}	ln[Ca], mol m^{-3}
0	0	0	0	0	0	0.005039282	0.000737			
0.25	3.02	66.93	0.0101229	0.00148058	0.0033743	0.00166498	0.00024352	−0.01918304	−3.953728	−8.320306
0.5	3.32	73.58	0.0111284	0.00162766	0.0037094	0.001329784	0.0001945	−0.0001961	−8.536866	−8.545102
0.75	3.56	78.90	0.0119329	0.00174532	0.0039776	0.001061628	0.00015527	−0.00015688	−8.760010	−8.770316
1	3.7	82.00	0.0124022	0.00181396	0.0041340	0.000905203	0.0001324	−9.1515E-05	−9.299006	−8.929715
1.5	3.95	87.54	0.0132402	0.00193652	0.0044134	0.000625874	9.1541E-05	−8.171E-05	−9.412335	−9.298726
2	4.11	91.09	0.0137765	0.00201497	0.0045921	0.000447103	6.5394E-05	−5.2294E-05	−9.858622	−9.635086
2.5	4.25	94.19	0.0142458	0.0020836	0.0047486	0.000290678	4.2515E-05	−4.5758E-05	−9.992153	−10.06565
3	4	88.65	0.0134078	0.00196104	0.0044692	0.000570008	8.337E-05	8.17099E-05	-----	−9.392224

Table S6 Differential analysis of data at 70 °C for transesterification of *Argemone mexicana* oil

Time, min	BD, g	Yield, %	BD, mol	BD concentration mol m^{-3}	Oil mol reacted	Oil unreacted, mol	C_{oil} mol mL^{-1}	d[Ca]/dt mol m^{-3} min^{-1}	ln(−d[Ca]/dt) mol m^{-3} min^{-1}	ln[Ca], mol m^{-3}
0	0	0	0	0	0	0.005039282	0.000737			
0.25	3.27	72.47	0.0109608	0.00160315	0.0036536	0.00138565	0.00020267	−0.02137	−3.8457	−8.503950
0.5	3.39	75.13	0.0113631	0.00166198	0.0037877	0.001251572	0.00018306	−7.8442E-05	−9.453157	−8.605719
0.75	3.49	77.34	0.0116983	0.00171101	0.003899	0.00113984	0.00016671	−6.5368E-05	−9.635478	−8.699231
1	3.57	79.12	0.0119664	0.00175023	0.0039888	0.001050455	0.00015364	−5.2294E-05	−9.858622	−8.780896
1.5	3.73	82.66	0.0125027	0.00182867	0.0041675	0.000871684	0.00012749	−5.2294E-05	−9.858622	−8.967448
2	3.86	85.54	0.0129385	0.0018924	0.0043128	0.000726433	0.00010625	−4.2489E-05	−10.06626	−9.149729
2.5	3.96	87.76	0.0132737	0.00194143	0.0044245	0.000614701	8.9907E-05	−3.2684E-05	−10.32862	−9.316739
3	3.5	77.57	0.0117318	0.00171591	0.0039106	0.001128667	0.00016508	0.000150346	-----	−8.709082