

Alternative Solvents for the Biorefinery of Spirulina: Impact of Pretreatment on Free Fatty Acids with High Added Value

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Supplementary material

Table S1 Amount of FFA in biomasses in µg/g DM, *n.d.* not detected

<i>Pretreatment</i>	<i>C 12:0</i>	<i>C14:0</i>	<i>C 16:0</i>	<i>C18:0</i>	<i>C16:1</i>	<i>C18:1</i>	<i>C18:2</i>	<i>C18:3</i>
<i>By-product SP-BP</i>	<i>n.d.</i>	<i>n.d.</i>	504.0 ± 7.8	171.0 ± 51.1	153.0 ± 7.8	72.0 ± 15.6	855.0 ± 68.0	796.5 ± 38.1
<i>Frozen SP-F</i>	<i>n.d.</i>	<i>n.d.</i>	105.0 ± 7.5	100.0 ± 10.7	60.0 ± 0.0	37.5 ± 0.0	227.5 ± 15.6	517.5 ± 27.0
<i>Oven-dried SP-OD</i>	<i>n.d.</i>	<i>n.d.</i>	322.8 ± 27.1	95.3 ± 7.5	62.8 ± 9.9	41.2 ± 7.5	476.7 ± 22.8	578.5 ± 39.3
<i>Air-dried SP-AD</i>	<i>n.d.</i>	<i>n.d.</i>	33.3 ± 4.2	36.0 ± 3.5	16.0 ± 0.0	6.0 ± 2.8	26.7 ± 1.1	21.3 ± 1.2
<i>Freeze-dried SP-FD</i>	<i>n.d.</i>	<i>n.d.</i>	90.7 ± 13.0	127.5 ± 8.5	<i>n.d.</i>	34.0 ± 0.0	<i>n.d.</i>	<i>n.d.</i>

Table S2 Average amount of FFA in extracts in mg/g DM

<i>Pretreatment</i>	<i>Solvent</i>	<i>C12:0</i>	<i>C14:0</i>	<i>C 16:0</i>	<i>C18:0</i>	<i>C16:1</i>	<i>C18:1</i>	<i>C18:2</i>	<i>C18:3</i>
<i>By-product SP-BP</i>	EtOAc	<i>n.d</i>	<i>n.d</i>	2.90	0.85	0.94	0.58	5.66	5.17
	DMC	<i>n.d</i>	<i>n.d</i>	2.83	0.71	0.94	0.55	6.43	6.35
	Heptane	<i>n.d</i>	<i>n.d</i>	0.45	0.40	0.261	0.21	0.50	1.67
	C9/C10/C12	<i>n.d</i>	32.46	35.5	32.44	<i>n.d</i>	19.31	23.18	16.22
<i>Frozen SP-F</i>	EtOAc	<i>n.d</i>	<i>n.d</i>	0.56	0.51	0.28	0.34	2.63	0.18
	DMC	<i>n.d</i>	<i>n.d</i>	0.16	0.11	0.07	0.09	0.97	0.47
	Heptane	0.18	<i>n.d</i>	0.16	0.18	<i>n.d</i>	0.08	0.15	0.11
	C9/C10/C12		4.16	4.65	4.95	<i>n.d</i>	2.18	<i>n.d</i>	<i>n.d</i>
<i>Oven-dried SP-OD</i>	EtOAc	1.20	<i>n.d</i>	1.66	0.16	0.28	0.20	2.26	2.97
	DMC	<i>n.d</i>	<i>n.d</i>	0.85	0.09	0.16	0.10	1.21	1.64
	Heptane	<i>n.d</i>	<i>n.d</i>	0.48	0.40	0.26	0.21	0.50	1.67
	C9/C10/C12	<i>n.d</i>	<i>n.d</i>	4.41	3.05	2.03	1.70	3.82	2.20
<i>Air-dried SP-AD</i>	EtOAc	0.05	<i>n.d</i>	0.06	0.05	0.03	0.03	0.04	0.03
	DMC	0.02	<i>n.d</i>	0.02	0.01	0.01	0.01	0.01	0.01
	Heptane	<i>n.d</i>	<i>n.d</i>	0.05	0.05	<i>n.d</i>	0.03	0.04	0.03
	C9/C10/C12	<i>n.d</i>	<i>n.d</i>	5.73	5.73	<i>n.d</i>	3.78	<i>n.d</i>	<i>n.d</i>
<i>Freeze-dried SP-FD</i>	EtOAc	<i>n.d</i>	<i>n.d</i>	0.18	0.17	<i>n.d</i>	<i>n.d</i>	0.10	<i>n.d</i>
	DMC	0.11	<i>n.d</i>	0.09	0.11	<i>n.d</i>	0.04	0.05	0.05
	Heptane	0.10	<i>n.d</i>	0.09	0.10	<i>n.d</i>	0.04	0.06	<i>n.d</i>
	C9/C10/C12	<i>n.d</i>	3.83	4.11	3.84	<i>n.d</i>	1.92	<i>n.d</i>	<i>n.d</i>

Table S3: Retention time and m/z (ESI-) of free fatty acids

Fatty acids		m/z	RT (min)
C12:0	lauric acid	199.3	4.31
C14:0	myristic acid	227.4	6.40
C16:0	palmitic acid	255.4	8.43
C16:1	palmitoleic acid	253.4	6.81
C18:0	stearic acid	283.5	10.27
C18:1. ω-9	oleic acid	281.4	8.74
C18:2. ω-6	linoleic acid	279.4	7.38
C18:3. ω-6	γ -linolenic acid	277.25	6.16
C24:1. ω-9	nervonic acid	365.6	13.16