

Online supplementary to the article:

Interactive effects of ceftriaxone and chitosan immobilization on the production of arachidonic acid by and the microbiome of the chlorophyte *Lobosphaera* sp. IPPAS C-2047

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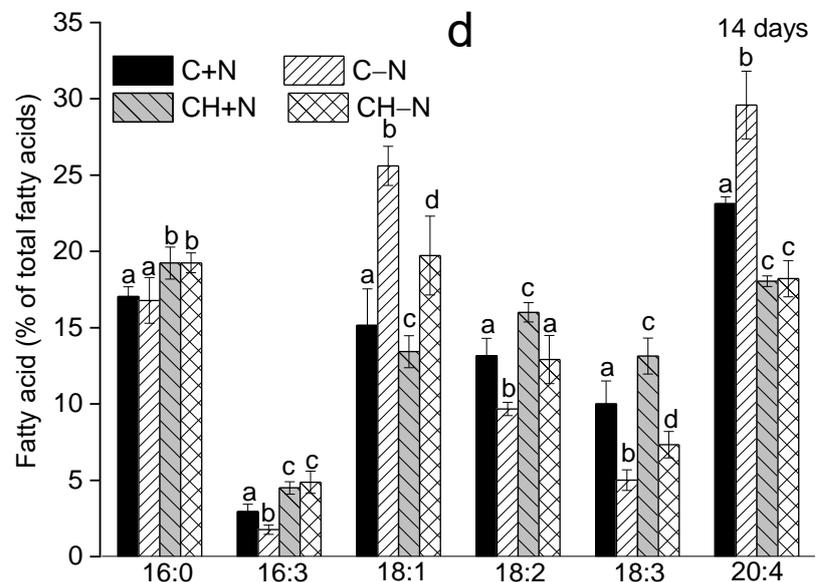


Figure S1. Figure 3d reprinted from [19] demonstrating that the accumulation of arachidonic acid in the immobilized and suspended cultures *Lobosphaera* sp. IPPAS C-2047 is similar ranging from 17 to 30% of the total fatty acids.

The profiles of the most abundant FAs among the total lipids in the cells of *Lobosphaera* sp. IPPAS C-2047 suspended (C+N, C-N) and immobilized (CH+N, CH-N) on chitosan in complete (C+N, CH+N) or N-free (C-N, CH-N) BG11M medium for 14 days are presented. Data are presented as means \pm STD ($n = 9$). Lowercase letters indicate significant differences between experimental variants at $p < 0.05$

Table S1. Fatty acid profile of the suspended cells of *Lobosphaera* sp. IPPAS C-2047 during their incubation in complete and nitrogen-free BG-11_M medium.

FA, % of TFA	+ N						- N	
	- CTA ¹			+ CTA			- CTA	
Incubation time	0 d	1 d	4 d	7 d	10 d	14 d	21 d	28 d
C14:0	3.7 ± 0.25	2.1 ± 0.9	2.3 ± 0.5	0.9 ± 0.3	2.2 ± 0.3	1.6 ± 0.3	0.6 ± 0.1	0.6 ± 0.1
C14:1Δ7	0.9 ± 0.1	0.8 ± 0.3	0.7 ± 0.3	0.4 ± 0.1	0.6 ± 0.2	0.3 ± 0.1	0.1 ± 0.1	0.1 ± 0.1
C15:0	2.9 ± 0.15	2.9 ± 1.1	2.9 ± 0.5	2.5 ± 0.3	6.2 ± 0.5	1.9 ± 0.2	0.4 ± 0.1	0.4 ± 0.1
C15:1Δ7	1.8 ± 0.11	1.8 ± 0.3	1.5 ± 0.4	1.9 ± 0.2	1.8 ± 0.3	0.9 ± 0.2	0.2 ± 0.1	0.1 ± 0.1
C16:0	31.8 ± 2.4	31.6 ± 3.2	30.7 ± 4.1	25 ± 3.1	29.5 ± 1.6	23.9 ± 1.6	15.5 ± 1.1	18.3 ± 2.7
C16:1Δ7	2.4 ± 0.3	5.1 ± 0.9	4.6 ± 1.1	4.7 ± 0.3	5.9 ± 0.7	3.3 ± 0.7	0.3 ± 0.1	0.6 ± 0.2
C16:1Δ9	3.3 ± 0.4	N/D	0.7 ± 0.3	0.2 ± 0	N/D	N/D	0.4 ± 0.1	0.4 ± 0.1
C16:2Δ7,10	1.3 ± 0.1	1.7 ± 0.3	1.2 ± 0.1	1.6 ± 0.3	2.7 ± 0.2	3.8 ± 0.2	0.6 ± 0.1	0.5 ± 0.2
C16:3Δ7,10,13	2.1 ± 0.2	1.5 ± 0.6	1.4 ± 0.3	3.3 ± 0.4	2.8 ± 0.3	3.9 ± 0.6	1.4 ± 0.1	0.9 ± 0.3
C16:4Δ4,7,10,13	1.1 ± 0	1.2 ± 0.4	1.9 ± 0.3	2.5 ± 0.5	4.5 ± 1	3.7 ± 0.4	0.2 ± 0.1	0.1 ± 0.1
C18:0	7.4 ± 1.2	4.6 ± 1.3	3.6 ± 0.6	2.7 ± 0.4	3.6 ± 0.6	2.2 ± 0.7	1.1 ± 0.1	1.8 ± 0.5
C18:1Δ9	19.2 ± 2.1	17.1 ± 2.4	22.7 ± 2.5	22 ± 3.2	16.6 ± 2.6	20.1 ± 2.6	35.5 ± 1.5	35.6 ± 2.4
C18:1Δ11	4.5 ± 0.5	5.1 ± 0.7	4.6 ± 0.3	3.3 ± 0.2	2.3 ± 0.2	2.3 ± 0.2	N/D	N/D
C18:2Δ9,12	8.3 ± 0.7	8.8 ± 1.4	8 ± 1.2	9.6 ± 1.3	8.6 ± 1.1	12.8 ± 2.9	13.1 ± 0.3	10.1 ± 1.2
C18:3Δ6,9,12	0.8 ± 0.1	0.6 ± 0.2	0.6 ± 0.2	1.5 ± 0.4	0.6 ± 0.2	0.6 ± 0.2	0.8 ± 0.1	0.5 ± 0.3
C18:3Δ9,12,15	2.9 ± 0.2	4.1 ± 1.2	2.6 ± 0.3	3.8 ± 0.6	2.9 ± 0.1	6.2 ± 0.9	3 ± 0.1	2.1 ± 0.4
C20:1Δ11	0.4 ± 0.1	0.6 ± 0.1	0.9 ± 0.1	1.6 ± 0.1	0.6 ± 0.2	0.4 ± 0.1	0.3 ± 0.1	0.2 ± 0.1
C21:0	N/D	0.2 ± 0.1	0.5 ± 0.1	0.5 ± 0.1	0.4 ± 0.1	0.2 ± 0.1	0.2 ± 0.1	0.2 ± 0.1
C20:2Δ11,14	N/D	0.4 ± 0.2	0.3 ± 0.1	0.9 ± 0.3	0.8 ± 0.2	0.7 ± 0.2	0.1 ± 0.1	0.1 ± 0.1
C20:3Δ8,11,14	N/D	0.3 ± 0.1	0.4 ± 0.2	0.6 ± 0.2	0.6 ± 0.1	0.6 ± 0.3	1.2 ± 0.2	1.1 ± 0.1
C20:4Δ5,8,11,14	5 ± 0.3	8.7 ± 0.8	7.1 ± 1	9.6 ± 1	6.3 ± 0.9	9.8 ± 0.6	23.8 ± 2	25.5 ± 1.2
C20:5Δ5,8,11,14,17	0.3 ± 0	0.8 ± 0.1	0.8 ± 0.3	0.9 ± 0.2	0.5 ± 0.1	0.8 ± 0.2	1.2 ± 0.1	0.8 ± 0.1

¹ - CTA—no ceftriaxone added; + CTA —20 mg/L ceftriaxone added.

Table S2. Fatty acid profile of the cells of *Lobosphaera* sp. IPPAS C-2047 immobilized on the chitosan-based cell carrier during their incubation in complete and nitrogen-free BG-11M₀ medium.

FA, % of TFA	+ N						- N	
	- CTA ¹		+ CTA				- CTA	
Incubation time	0 d	1 d	4 d	7 d	10 d	14 d	21 d	28 d
C14:0	3.7 ± 0.25	2.8 ± 0.3	2.4 ± 0.4	2.3 ± 0.3	2.2 ± 0.2	1.7 ± 0.2	1.8 ± 0.3	1.9 ± 0.2
C14:1Δ7	0.9 ± 0.1	0.6 ± 0	0.5 ± 0.1	0.5 ± 0.2	0.5 ± 0.2	0.4 ± 0.2	0.3 ± 0.1	0.7 ± 0.4
C15:0	2.9 ± 0.15	2.5 ± 0.1	2.9 ± 0.2	3.4 ± 0.1	3.1 ± 0.3	2.7 ± 0.3	2.1 ± 0.3	2.4 ± 0.5
C15:1Δ7	1.8 ± 0.11	0.8 ± 0.3	0.9 ± 0.4	2.2 ± 0.1	2.1 ± 0.5	2.1 ± 0.5	1.2 ± 0.2	1.5 ± 0.2
C16:0	31.8 ± 2.4	32.1 ± 2.1	28.2 ± 1.8	29.3 ± 2.2	29.6 ± 1.4	29.6 ± 1.4	25.7 ± 1.6	23.0 ± 3.6
C16:1Δ7	2.4 ± 0.3	2.4 ± 0.3	3.9 ± 2.7	2.6 ± 0.3	2.6 ± 0.6	2.2 ± 0.6	2 ± 0.6	2.4 ± 1.1
C16:1Δ9	3.3 ± 0.4	3 ± 0.1	1.9 ± 1.7	3.8 ± 0.3	3.1 ± 0.1	3.2 ± 0.1	2.2 ± 0.1	2.6 ± 0.3
C16:2Δ7,10	1.3 ± 0.1	1.8 ± 0.1	1.4 ± 0.3	1.5 ± 0.1	2.2 ± 0.1	2 ± 0.1	2.1 ± 0.3	1.9 ± 0.2
C16:3Δ7,10,13	2.1 ± 0.2	2.3 ± 0.1	2.5 ± 0.4	2.4 ± 0.6	3.8 ± 0.6	3.3 ± 0.6	2.5 ± 0.3	2.3 ± 0.9
C16:4Δ4,7,10,13	1.1 ± 0	0.7 ± 0.1	1 ± 0.3	1.3 ± 0.1	1.6 ± 0.2	1.1 ± 0.2	3.2 ± 1.1	2.3 ± 0.2
C18:0	7.4 ± 1.2	4.4 ± 0.6	3.8 ± 0.3	2.9 ± 1.1	2.6 ± 0.5	3.3 ± 0.5	2.9 ± 0.7	3.1 ± 0.5
C18:1Δ9	19.2 ± 2.1	14.3 ± 0.4	16.7 ± 1.6	15.1 ± 2.3	12.2 ± 2.2	13.4 ± 2.2	18.1 ± 3.3	14.9 ± 1.5
C18:1Δ11	4.5 ± 0.5	5 ± 0.4	3.9 ± 0.1	3.2 ± 0.4	3.3 ± 0.8	3.3 ± 0.8	6.2 ± 0.8	5.2 ± 0.3
C18:2Δ9,12	8.3 ± 0.7	9 ± 0.6	9 ± 0.9	8.1 ± 1.4	9.8 ± 0.5	10.9 ± 0.5	10.5 ± 0.7	10.3 ± 1.9
C18:3Δ6,9,12	0.8 ± 0.1	0.5 ± 0	0.5 ± 0.1	0.9 ± 0.9	0.4 ± 0.1	1 ± 0.1	0.3 ± 0.1	0.3 ± 0.1
C18:3Δ9,12,15	2.9 ± 0.2	6.9 ± 0.5	6.9 ± 1.1	6.6 ± 1.1	8.1 ± 1.5	7.5 ± 1.5	5.4 ± 0.5	5.2 ± 1.2
C20:1Δ11	0.4 ± 0.1	0.9 ± 0.4	0.7 ± 0.2	1.1 ± 0.9	0.6 ± 0.2	1.2 ± 0.2	0.4 ± 0.2	0.4 ± 0.1
C21:0	N/D	0.3 ± 0.1	0.1 ± 0.1	0.3 ± 0.2	0.2 ± 0.1	0.1 ± 0.1	0.1 ± 0.1	0.1 ± 0.1
C20:2Δ11,14	N/D	0.3 ± 0.2	0.2 ± 0.1	0.3 ± 0.1	0.2 ± 0.1	0.1 ± 0.1	0.3 ± 0.2	0.1 ± 0.2
C20:3Δ8,11,14	N/D	0.4 ± 0.3	0.8 ± 0.1	0.9 ± 0.2	0.6 ± 0.1	0.9 ± 0.1	0.5 ± 0.1	0.6 ± 0.2
C20:4Δ5,8,11,14	5 ± 0.3	8.1 ± 0.5	10.6 ± 1.2	10.2 ± 1.1	10.1 ± 1.7	9 ± 0.9	11 ± 1.7	17.5 ± 2.3
C20:5Δ5,8,11,14,17	0.3 ± 0	1 ± 0.2	1.3 ± 0.3	1.4 ± 0.4	1.1 ± 0.4	1 ± 0.4	1.2 ± 0.1	1.1 ± 0.1

¹ - CTA—no ceftriaxone added; + CTA —20 mg/L ceftriaxone added.