

Electronic Supplementary information:

Improving lipid recovery from *Scenedesmus* wet biomass by surfactant-assisted disruption

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The supporting information contains 6 pages, including Table S1 for the character of different growth type of biomass, Fig S1 for the quantity of FAME under the two different solvents, Fig S2 FAME profile via Folch and isopropanol extraction under different surfactant treatments, Fig S3 Cell structures of protein-rich *Scenedesmus* biomass under 3_DAPS, MTMA and SDS treatments, Fig S4 Cell structures of intermediate-lipid *Scenedesmus* biomass under 3_DAPS, MTMA and SDS treatments, and Fig S5 for the flow cytometer assay with SYTOX green emission.

Table S1 Summary of characteristic parameters of *Scenedesmus* biomass for the different growth conditions

Types	TSS	VSS	Elemental composition (%)			Total FAME*
	(g/L)	(g/L)	Carbon	Hydrogen	Nitrogen	(% of dried biomass)
Protein-rich biomass	20	20	53	9	9	5 ± 1
Intermediate-lipid biomass	23	23	53	9	7	6 ± 1
High-lipid biomass	20	20	56	10	2	22 ± 3

*Total FAME obtained via direct transesterification

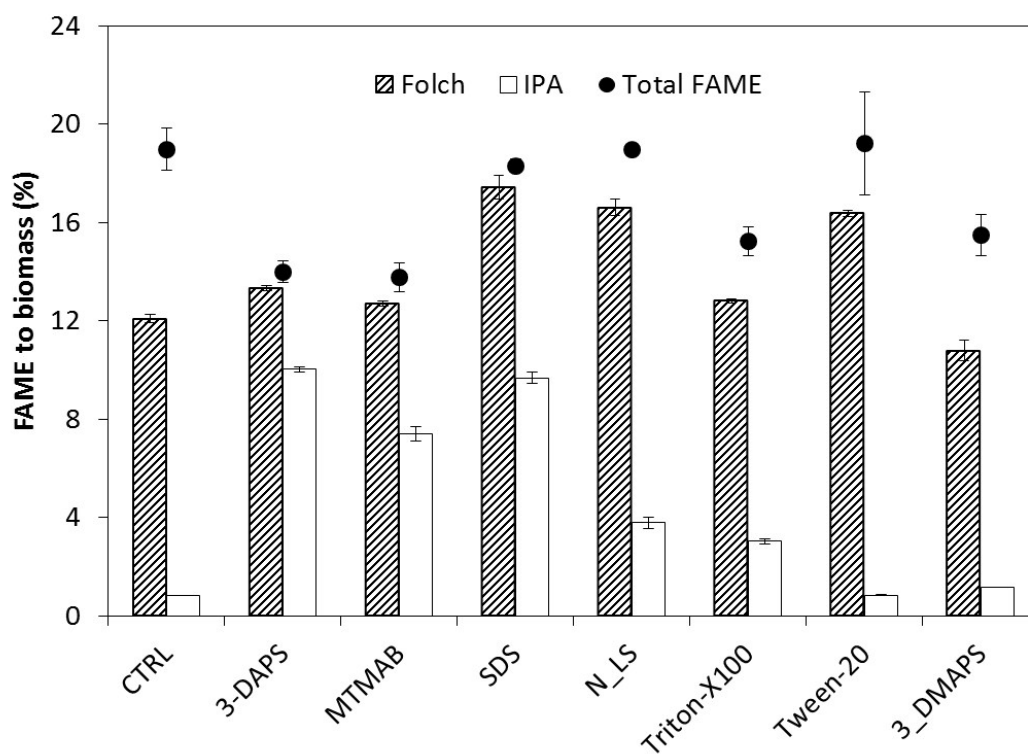


Figure S1. FAME recovery from dried biomass extraction via Folch and isopropanol for different surfactant treatments and their respective total FAME obtained from direct transesterification.

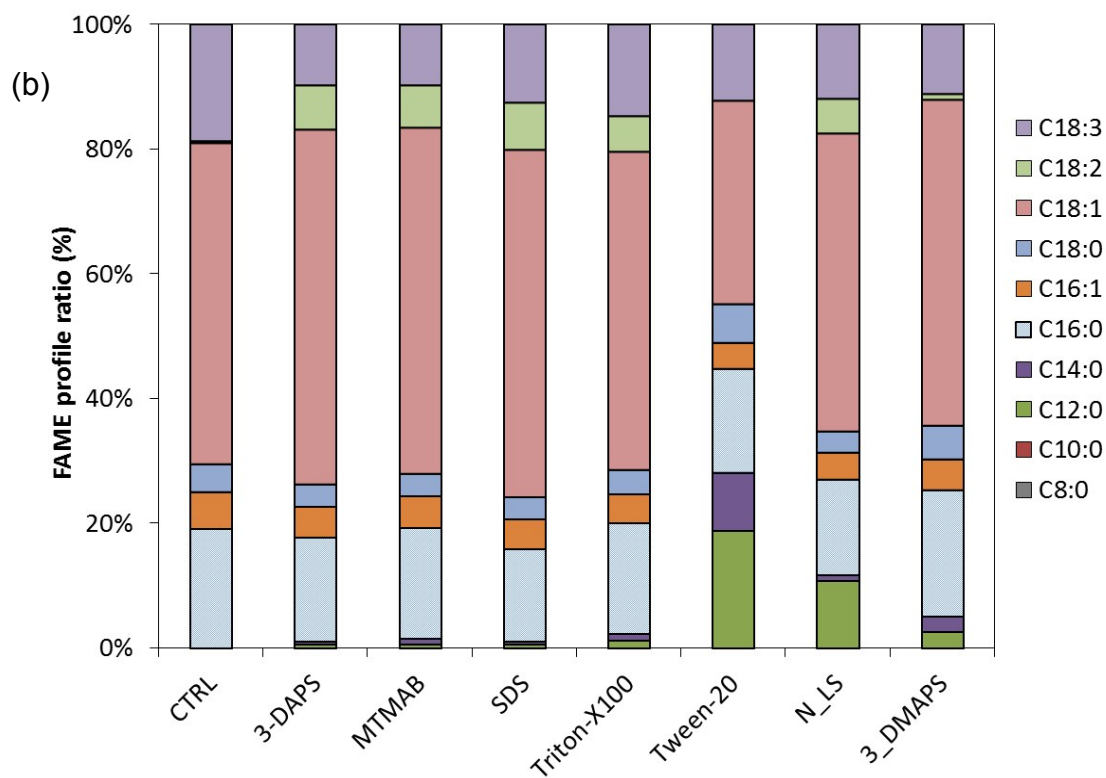
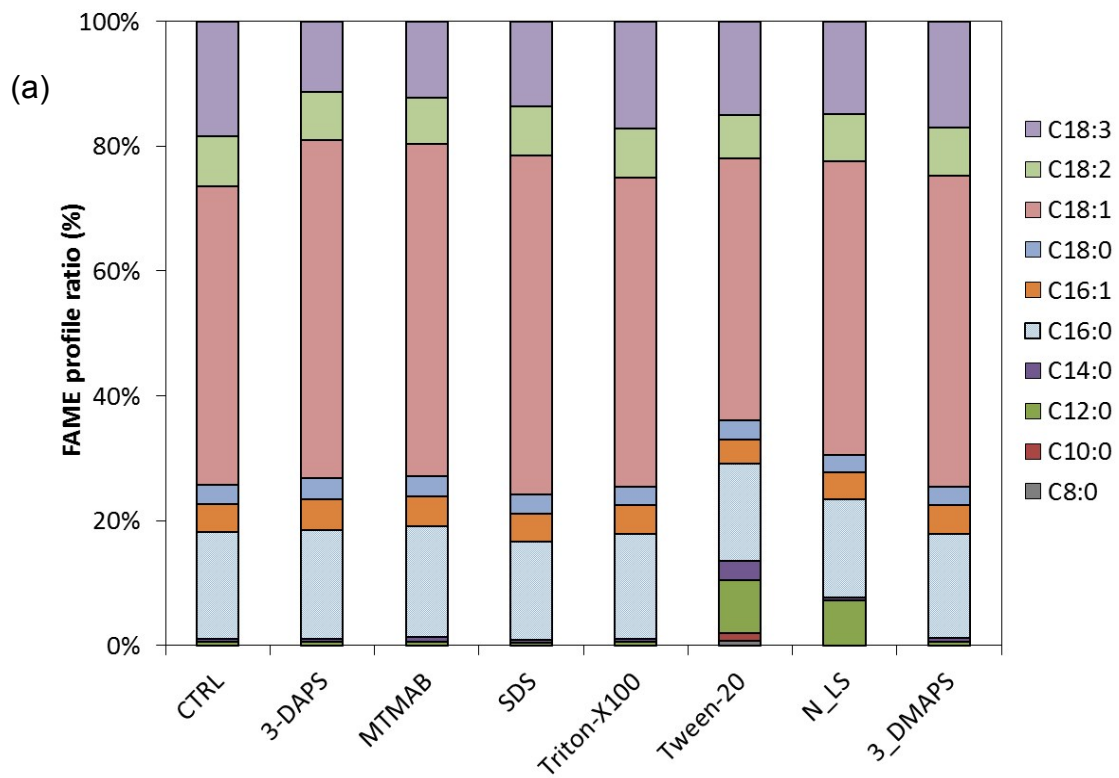


Figure S2. FAME profiles obtained via (a) Folch solvent (b) isopropanol solvent extraction for the different surfactant treatments.

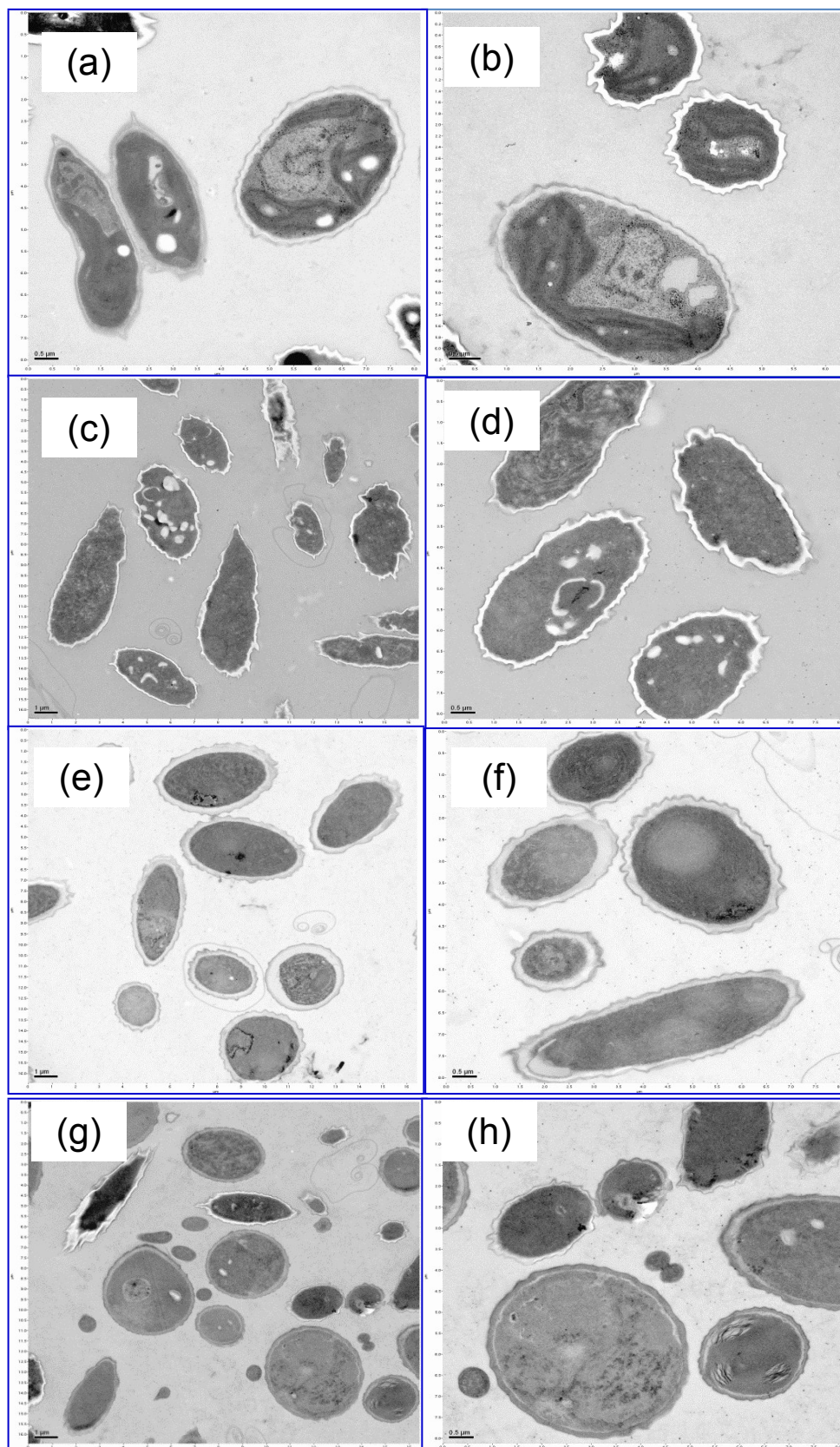


Figure S3. TEM images of protein-rich *Scenedesmus* biomass for (a, b) control, (c, d) 3_DAPS-, (e, f) MTAB-, and (g, h) SDS-treated biomass. a, c, e and g belonged to the large-field images and b, d, f and h belonged to local area images.

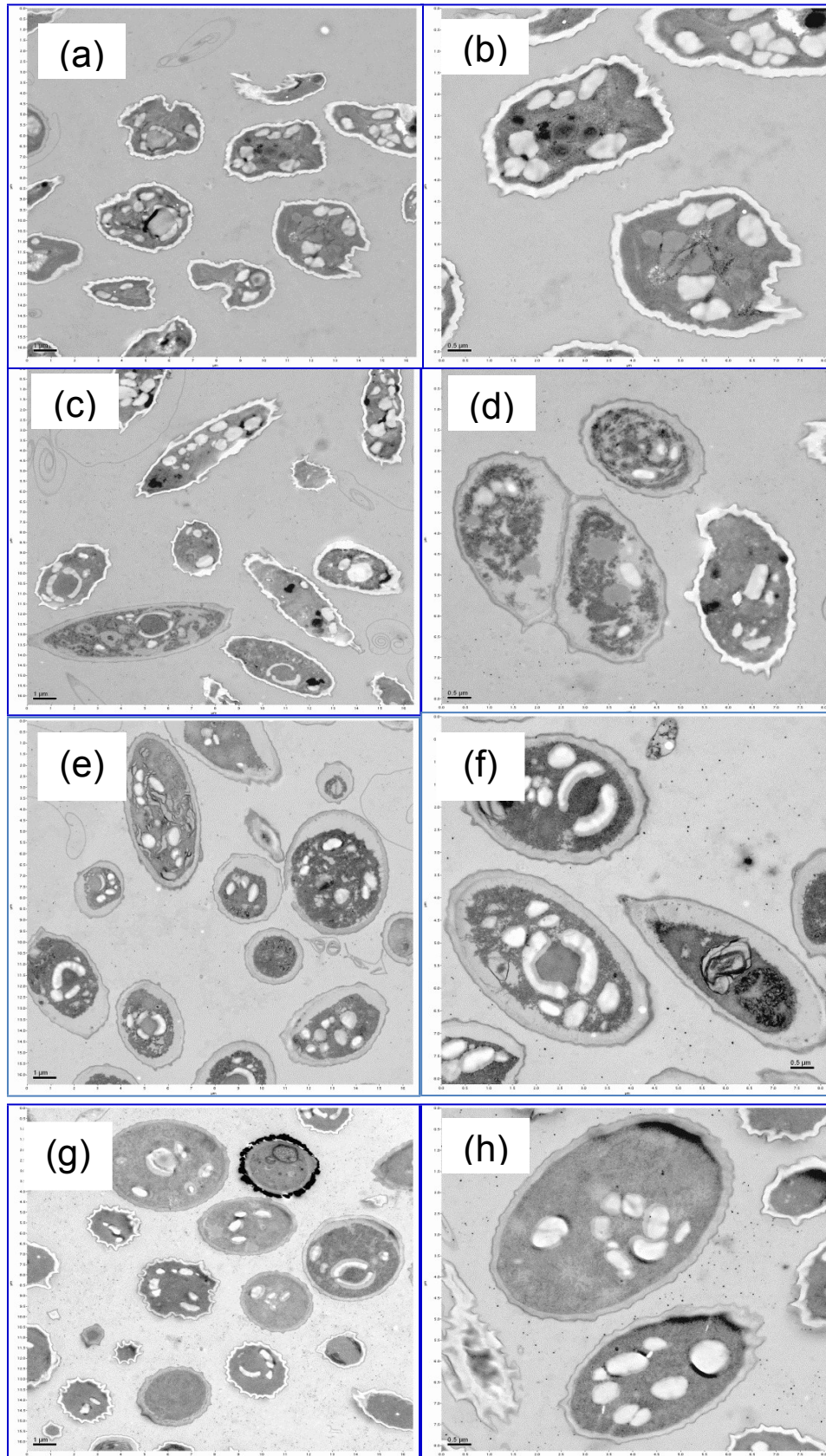


Figure S4. TEM images of intermediate-lipid *Scenedesmus* biomass for (a, b) control, (c, d) 3_DAPS-, (e, f) MTAB-, and (g, h) SDS-treated biomass. a, c, e and g belonged to the large-field images and b, d, f and h belonged to local area images.

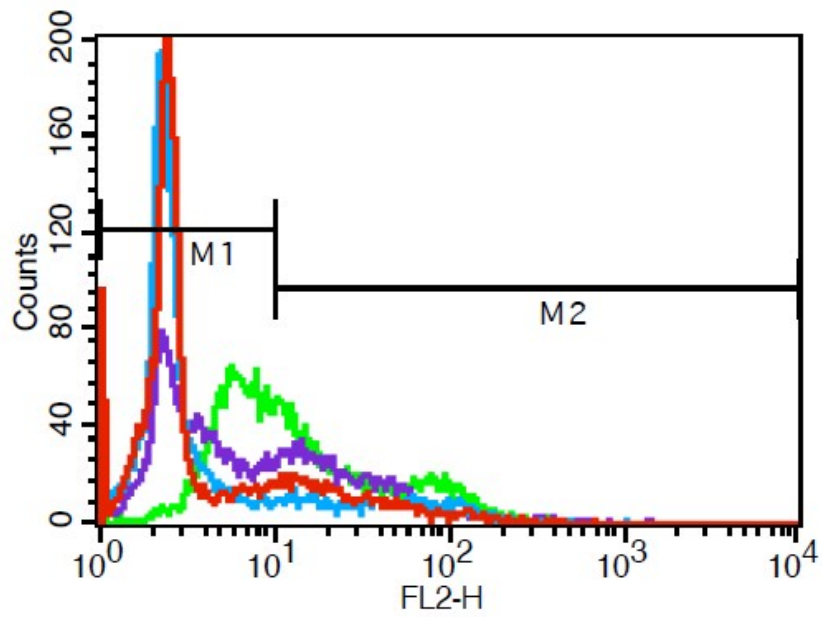


Figure S5. Efficiency of cell lysis by surfactants as evaluated by flow cytometry for high-lipid *Scenedesmus* biomass amended with SYTOX. Samples are (a) control (red line); (b) 3_DAPS (green line); (c) MTAB (purple line), and (d) SDS (light blue) surfactant.

