Supplementary Information

Table S1. Distribution of fatty acyl substituents generated from algae. FAME molecular ion assignments and abundance for FAME generated from healthy and stressed *Neochloris*, and KAS 603 are given as mean values (± standard error) relative to dry cell weight.

FA	m/z	healthy *Neochloris* % (±)	stressed *Neochloris* % (±)	KAS 603 % (±)
C14:0 (myristate)	243	2.9 (0.5)	2.7 (0.4)	2.6 (0.5)
C16:0 (palmitate)	271	16.3 (3.2)	41.4 (9.9)	50.6 (5.8)
C18:3 (linolenate)	293	22.2 (4.2)	9.7 (3.6)	8.3 (3.9)
C18:2 (linoleate)	295	2.7 (1.4)	2.4 (1.0)	0.6 (0.2)
C18:1 (oleate)	297	2.3 (0.6)	3.9 (0.2)	2.7 (0.6)
C18:0 (stearate)	299	4 (1.2)	9.2 (2.5)	13.3 (1.9)
C20:0 (arachidate)	327	0.9 (0.3)	1.8 (0.6)	9.0 (1.9)
C21:4 (heneicosatetranate)	333	46.0 (3.5)	26.2 (7.8)	10.4 (5.0)
C23:5 (tricosapentaenate)	359	2.6 (0.6)	2.8 (0.1)	2.4 (0.1)

Figure S1. Algal biomass quantitation by chlorophyll absorbance detection. Dried cell weight concentration (DCW conc) of healthy *Neochloris*, stressed *Neochloris*, and KAS603 suspensions were fit to spectrophotometric measurement of optical density at 680 nm (OD_{680}) ($R^2 > 0.990$).

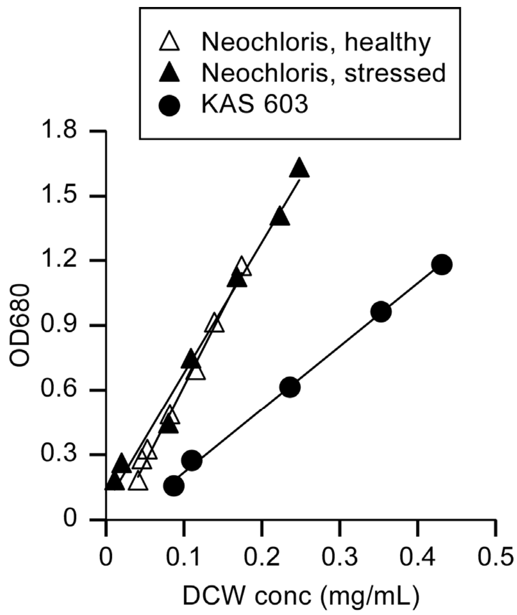

Figure S2. Effect of freshwater media pH on algal binding capacity of Amberlite, for algal species *Neochloris oleoabundans* and KAS 603.

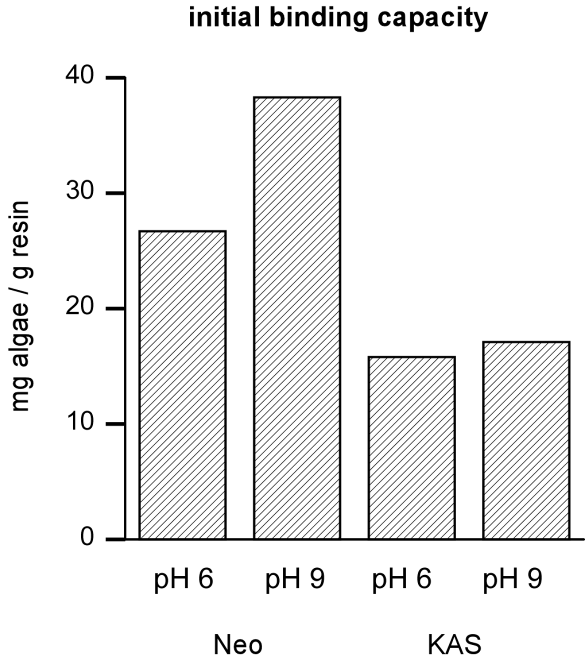

Figure S3. Resolution of lipid classes by normal-phase HPLC-ELSD for identification and quantification. Retention standards for hydrocarbon (HC), fatty acid methyl ester (FAME), and triacylglycerol (TAG) (**a**), calibration of ELSD chromatogram peak areas to lipid standard concentrations (sigmoidal fit, $R^2 > 0.99$) (**b**).

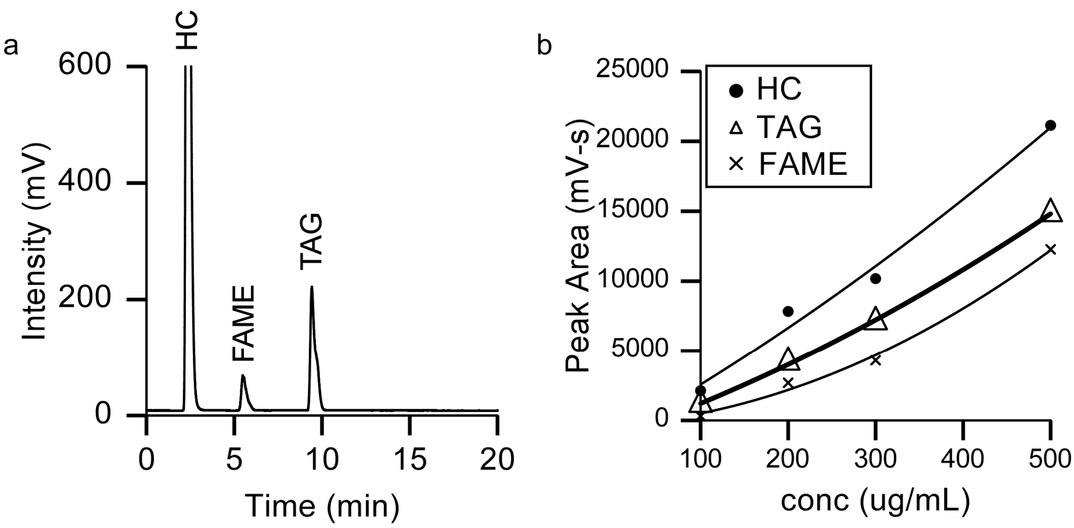

Figure S4. Normal-phase HPLC-ELSD chromatograms from a typical hexane extract from resin column elution shows algal HC and FAME recovered after transesterification of KAS 603 (**a**); this is compared to chromatograms from the total algal lipid extracts for healthy *Neochloris* (**b**); stressed *Neochloris* (**c**); and KAS 603 (**d**). Note differences in time axis intervals between (a) and (b–d).

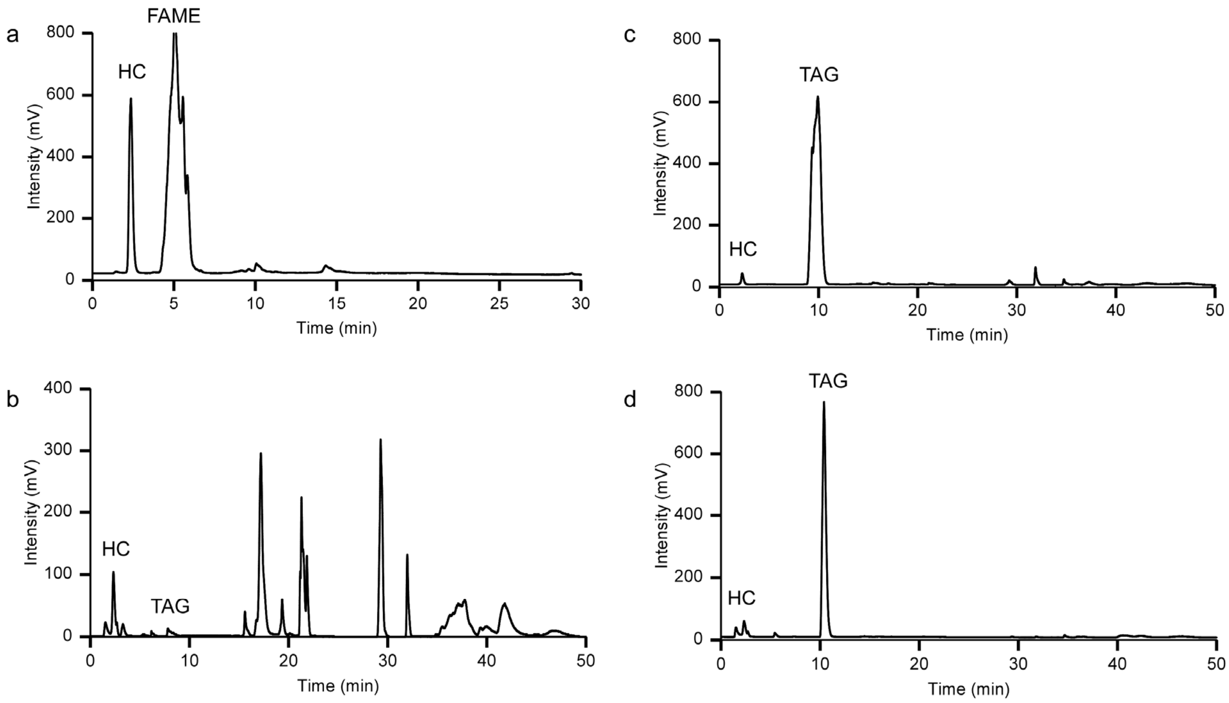

Figure S5. HPLC-APCI-MS positive mode spectra for FAME standards methyl palmitate (C16:0) (**a**) and methyl oleate (C18:1) (**b**) show characteristic molecular ion $[M+H]^+$ and occasionally fragment $[RCO]^+$ species.

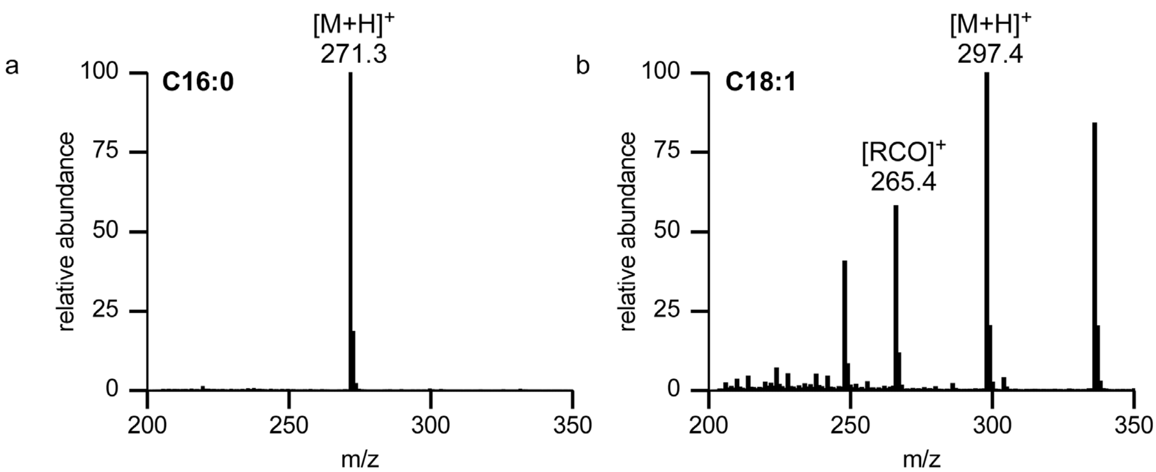

Figure S6. Typical APCI-MS positive mode spectra for FAME generated from healthy *Neochloris* (**a**), stressed *Neochloris* (**b**), and *Chlorella* (**c**) are dominated by C16:0, C18:0 or C18:3, and C21:4 species.

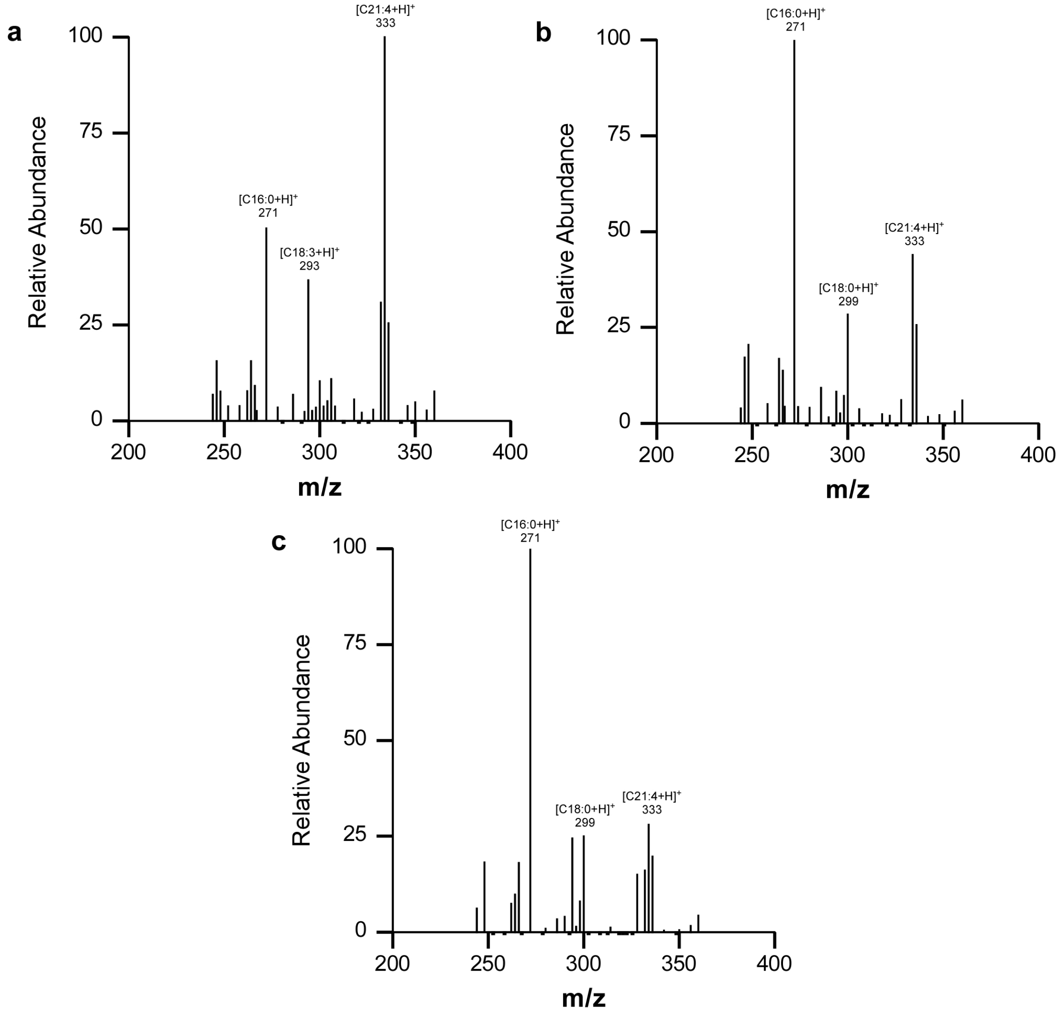

Figure S7. Use of ethanol as an alternate transesterification alcohol to methanol. Comparison of fatty acid ester yield relative to dry cell weight (DCW) for methanol and ethanol with 5% sulfuric acid catalyst for resin-bound *Neochloris* and KAS 603.