SUPPLEMENT

Dead in the water: the vicious cycle of blanks during natural level ^{14}C manipulation of marine algal cultures

Stephanie Kusch, Albert Benthien, Klaus-Uwe Richter, Björn Rost, Gesine Mollenhauer

Table S1. Radiocarbon ($\Delta^{14}C$) and stable carbon isotope ($\delta^{13}C$) results of purified chlorophyll *a*, alkenones, and LMW alkanoic acids. Errors denote 1σ analytical uncertainties. Reproducibility is <2σ analytical uncertainties.

Sample	MODERN			INTERMEDIATE			FOSSIL		
	$\delta^{13}C$ [‰]	$\Delta^{14}C$ [‰]	ID[#]	$\delta^{13}C$ [‰]	$\Delta^{14}C$ [‰]	ID[#]	$\delta^{13}C$ [‰]	$\Delta^{14}C$ [‰]	ID[#]
E. huxleyi									
DIC pre-growth	–1.0±0.1	60.0±3.4	100689	–14.5±0.1	–380.1±2.4	100691	–22.1±0.1	–711.1±1.6	100693
DIC post-growth	4.2±0.1	83.0±3.5	100690	–12.1±0.1	–437.1±2.0	100692	–13.1±0.1	–519.4±2.1	100694
chlorophyll *a*	–15.4±0.1	24.5±10.6	89070	–27.6±0.1	–463.9±2.0	89071	–22.5±0.1	–277.6±2.5	89072
alkenones	–20.2±0.1	77.0±3.9	89073	–35.0±0.1	–451.3±2.1	89074	–30.2±0.1	–280.3±2.5	89075
T. pseudonana									
DIC pre-growth	–14.8±0.1	–43.9±2.9	100695	–8.8±0.1	–135.7±3.0	100697	–16.5±0.1	–439.8±2.2	100699
DIC post-growth	–11.0±0.1	–505.2±2.5	100696	–2.4±0.1	–172.8±2.6	100698	–23.6±0.1	–843.1±1.3	100700
chlorophyll *a*	–27.8±0.1	–452.3±1.9	89076	n.d.	–357.0±42.8	ETH 44554	–34.7±0.1	–706.5±2.3	89078
$C_{14:0}$ alkanoic acid	–30.2±0.1	–348.8±3.1	89079	n.d.	–490.5±37.2	ETH 44552	n.a.	n.a.	
$C_{16:0}$ alkanoic acid	n.a.	n.a.		n.d.	–332.9±25.5	ETH 44553	–42.6±0.1	–653.3±2.0	89082
$C_{16:1}$ alkanoic acid	n.a.	n.a.		n.a.	n.a.		n.d.	–689.6±23.7	ETH 44555

[#] NOSAMS ID number; IDs with ETH prefix represent ultra-small samples analyzed at ETH Zürich.

n.a. Not analyzed.

n.d. Not determined.

Table S2. DIC concentrations (mmol/kg) and final cell biomass (cells/ml) in the *E. huxleyi* and *T. pseudonana* cultures.

Sample	MODERN	INTERMEDIATE	FOSSIL
E. huxleyi			
DIC pre-growth	2.04	2.05	1.82
DIC post-growth	0.82	1.25	0.81
biomass	735,300	366,900	584,600
T. pseudonana			
DIC pre-growth	2.04	2.14	2.24
DIC post-growth	1.34	1.36	1.82
biomass	n.d.*	n.d. *	n.d. *

* Could not be determined with the Coulter Counter.

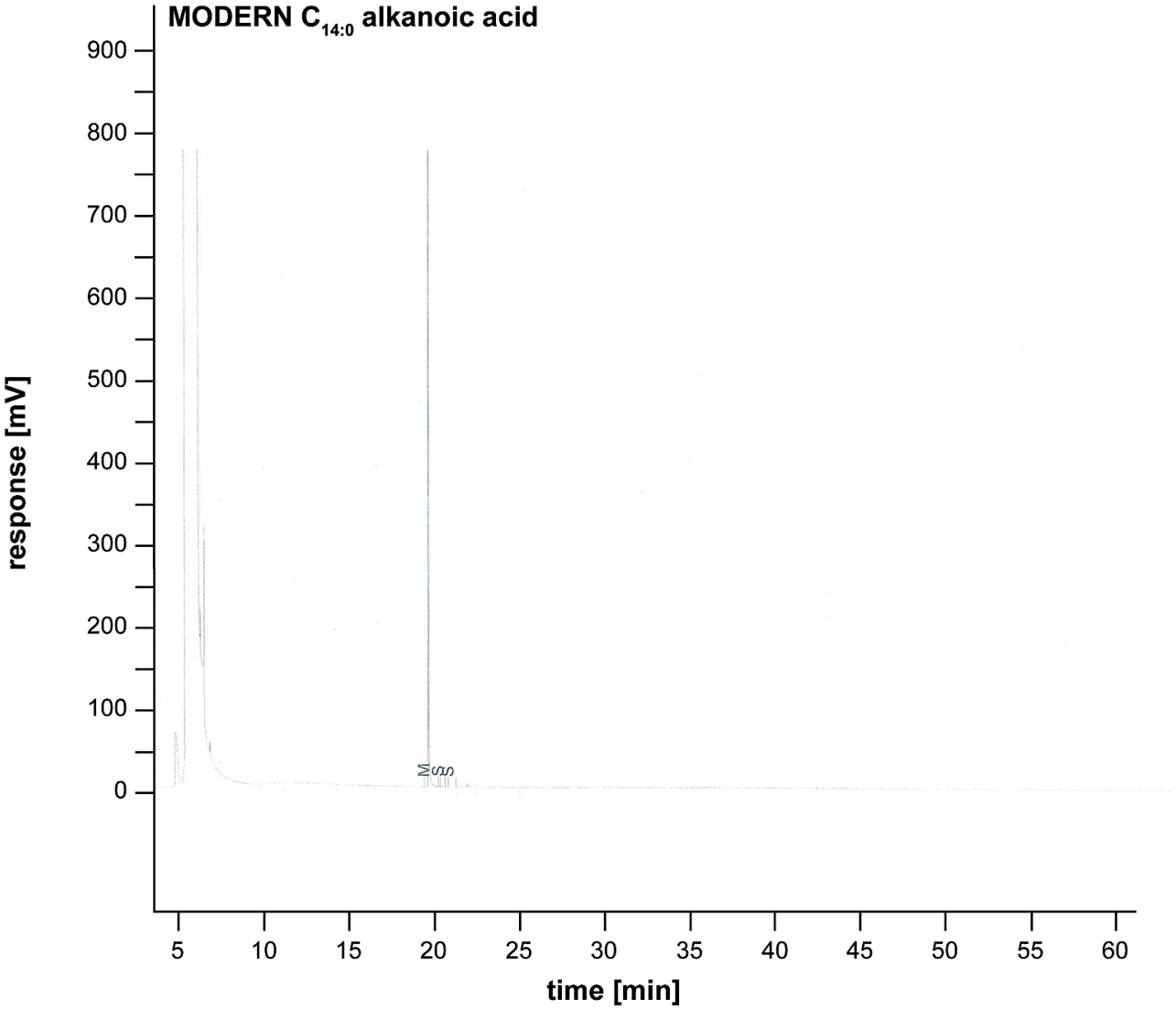

Fig S1. Chromatogram of the purified 'Modern' $C_{14:0}$ alkanoic acid fraction. GC-based compound purity is 98.6%.

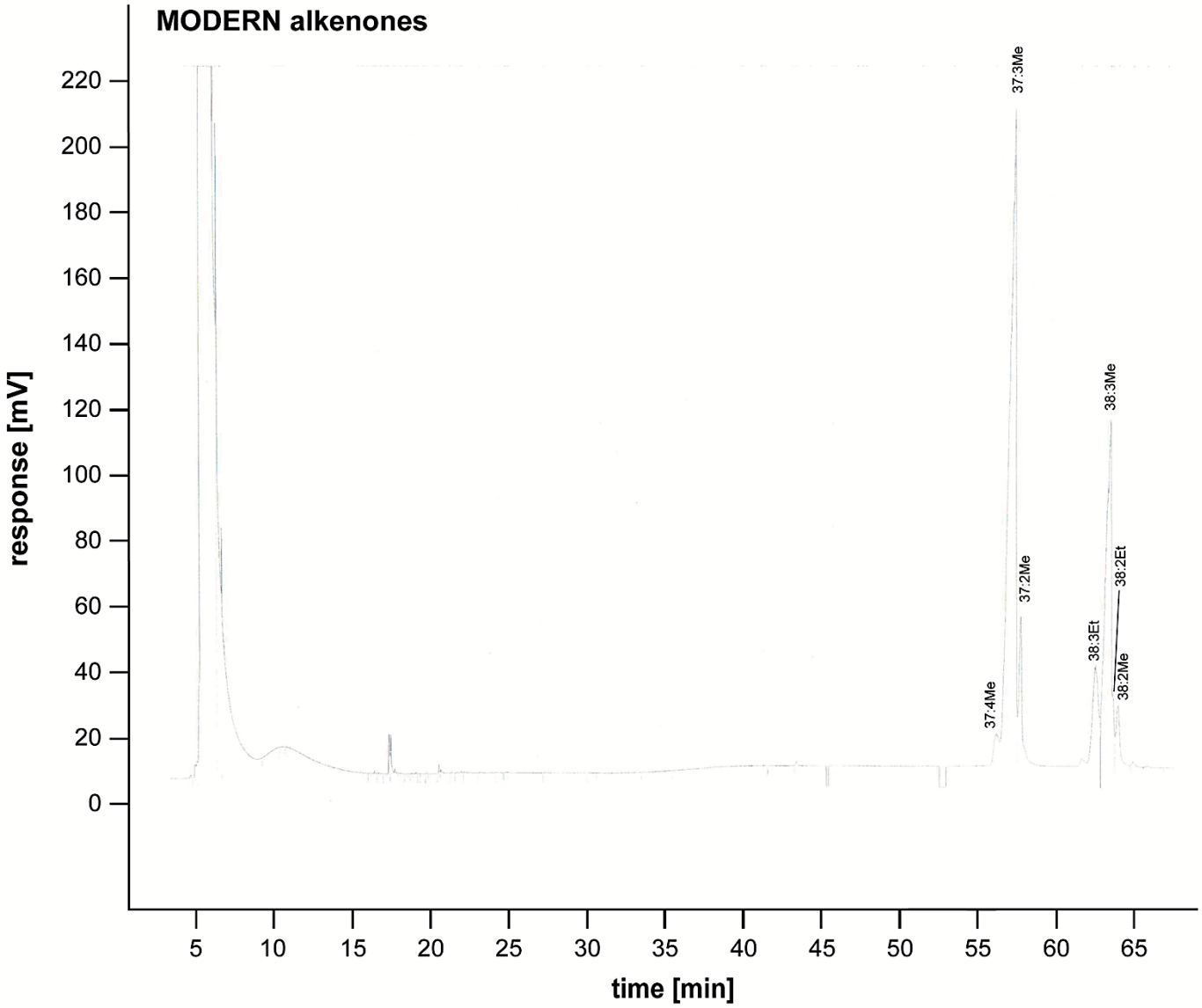

Fig S2. Chromatogram of the purified 'Modern' alkenones fraction. GC-based compound-fraction purity is 98.3%.

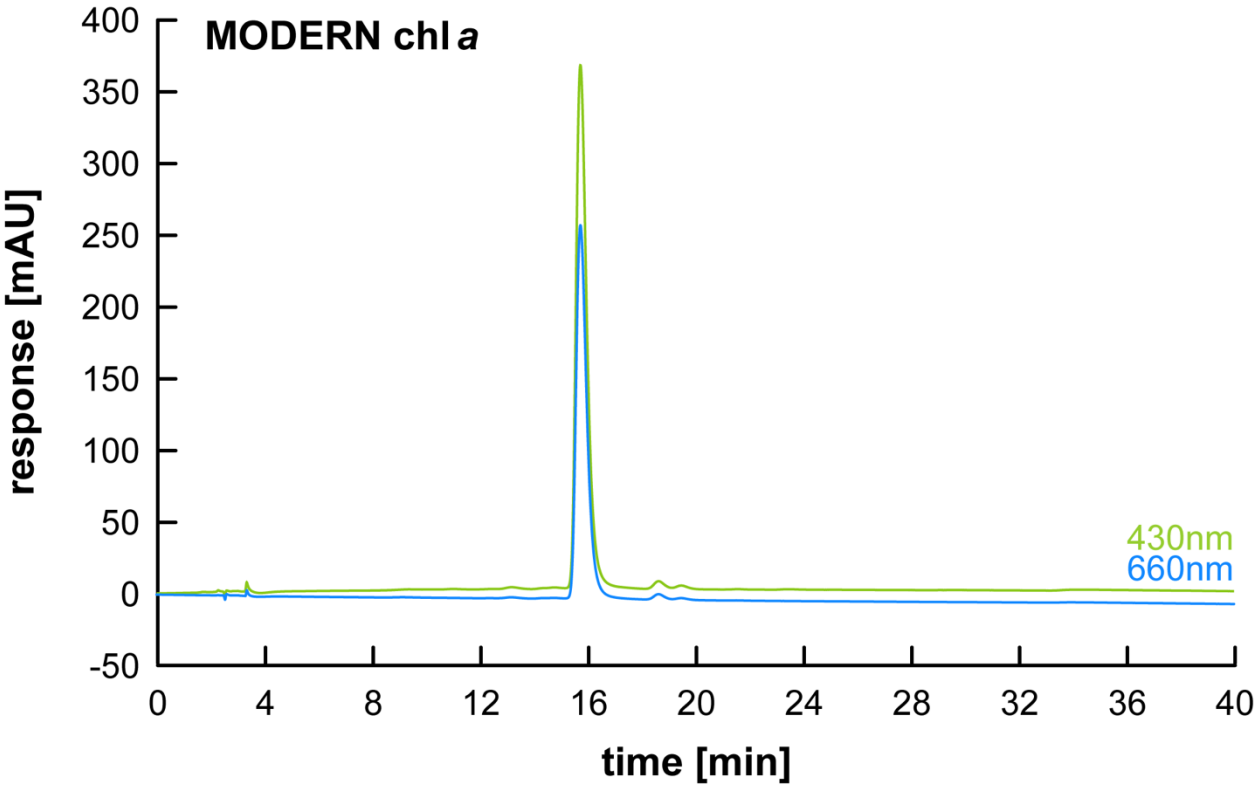

Fig S3. Chromatogram of the 'Modern' chlorophyll *a* fraction obtained from *E. huxleyi* after the first LC purification step.

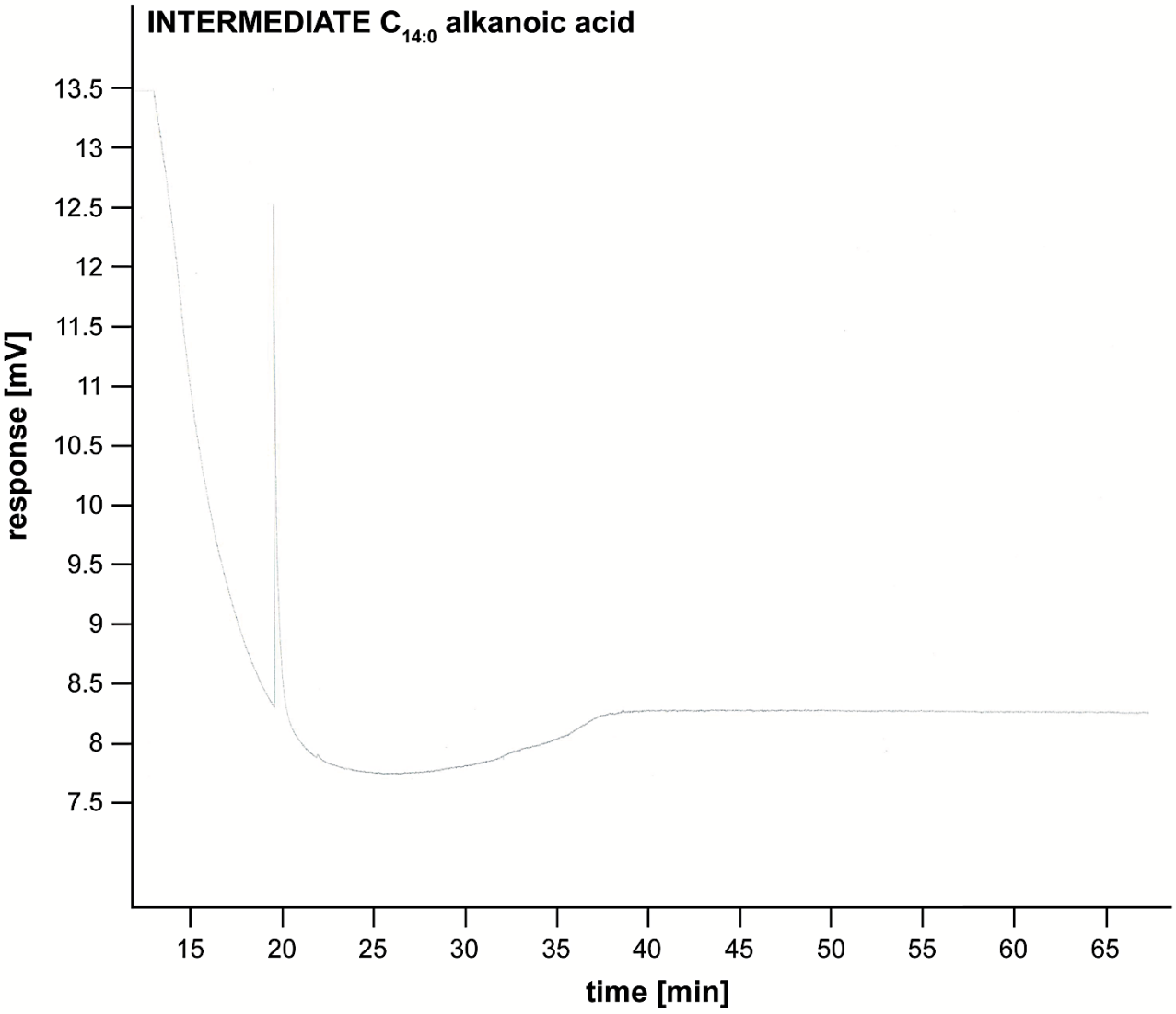

Fig S4. Chromatogram of the purified 'Intermediate' $C_{14:0}$ alkanoic acid fraction. GC-based compound purity is 99.9%.

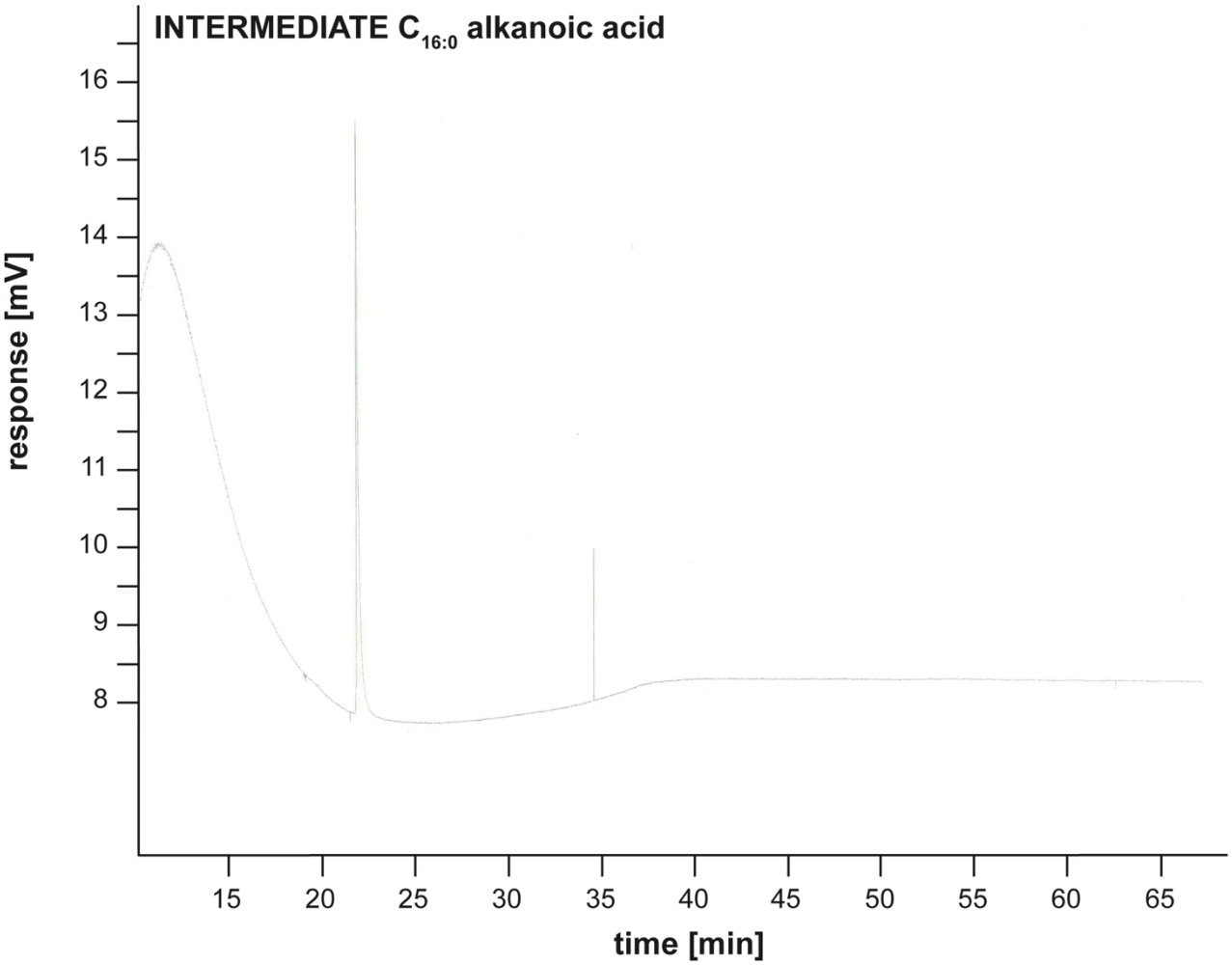

Fig S5. Chromatogram of the purified 'Intermediate' $C_{16:0}$ alkanoic acid fraction. GC-based compound purity is 99.9%. Note that the signal at approximately 35 min is not a peak, but an artefact caused by a detector fault.

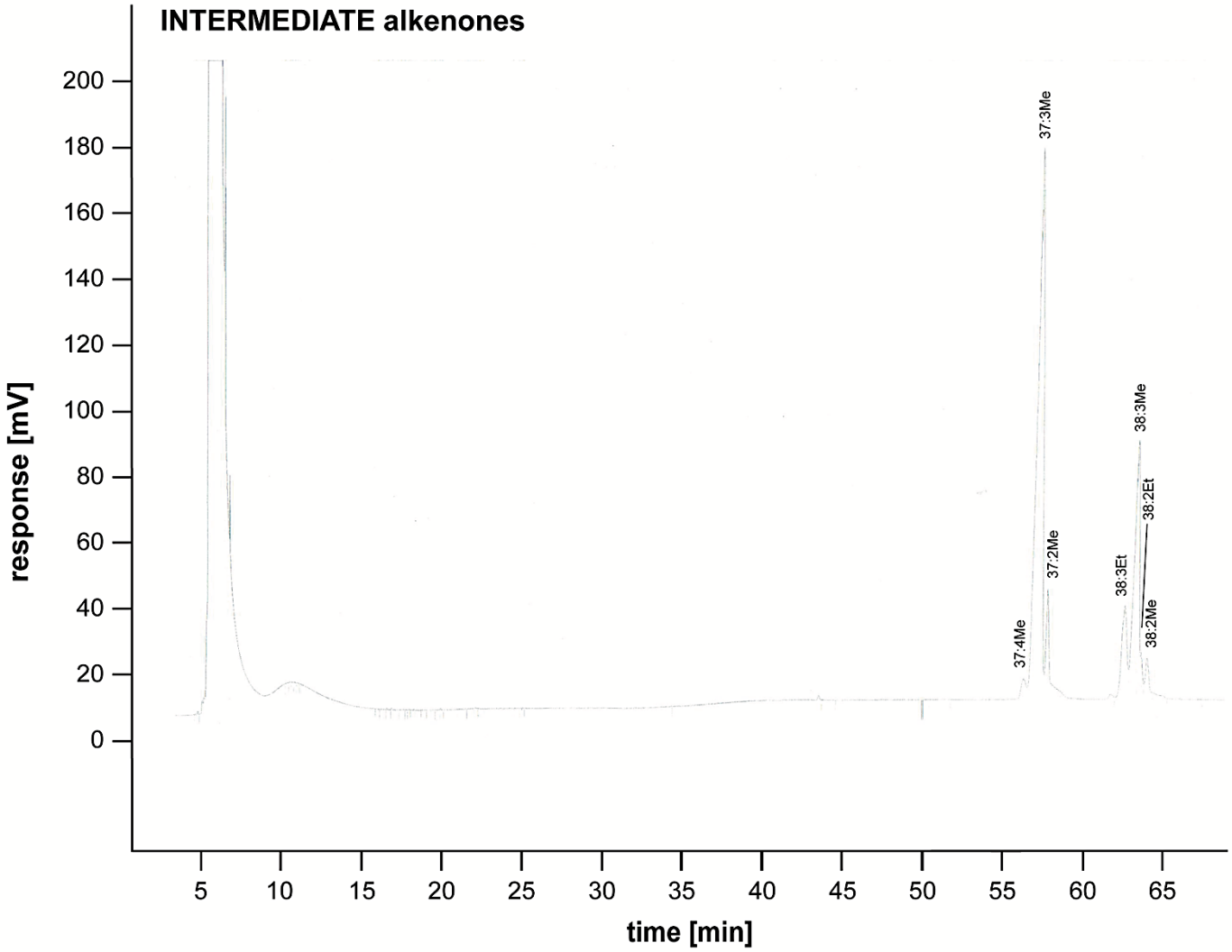

Fig S6. Chromatogram of the purified 'Intermediate' alkenones fraction. GC-based compound-fraction purity is 99.8%.

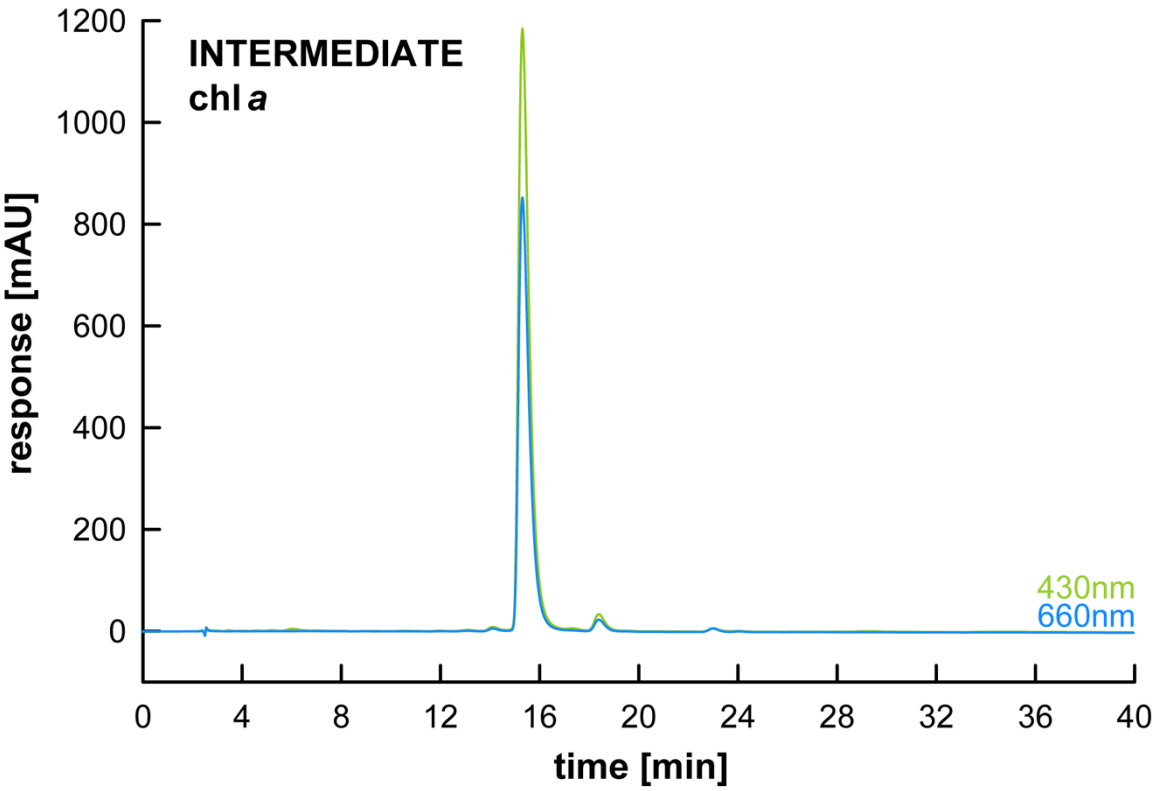

Fig S7. Chromatogram of the 'Intermediate' chlorophyll *a* fraction obtained from *E. huxleyi* after the first LC purification step.

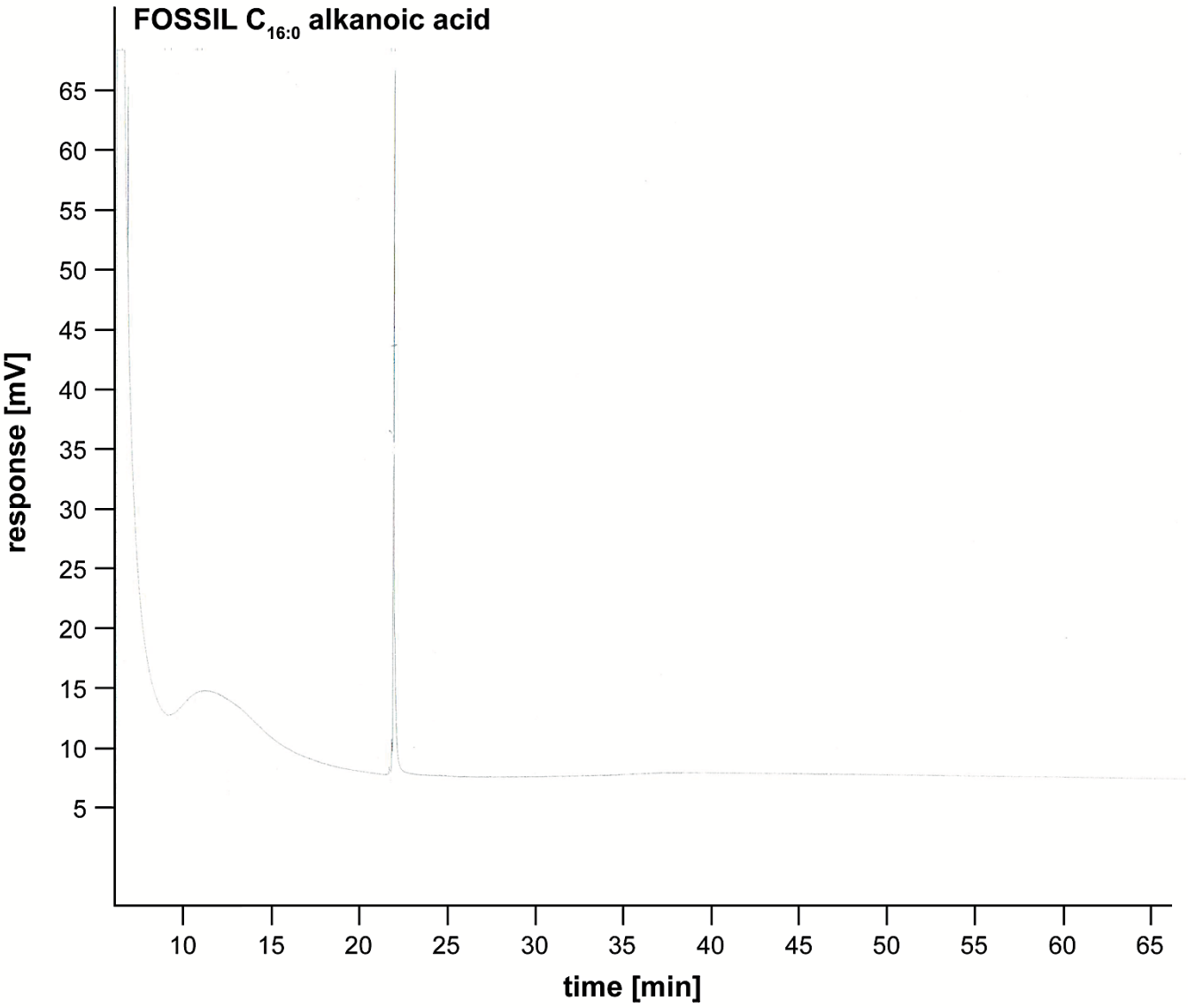

Fig S8. Chromatogram of the purified 'Fossil' $C_{16:0}$ alkanoic acid fraction. GC-based compound purity is 97.3%.

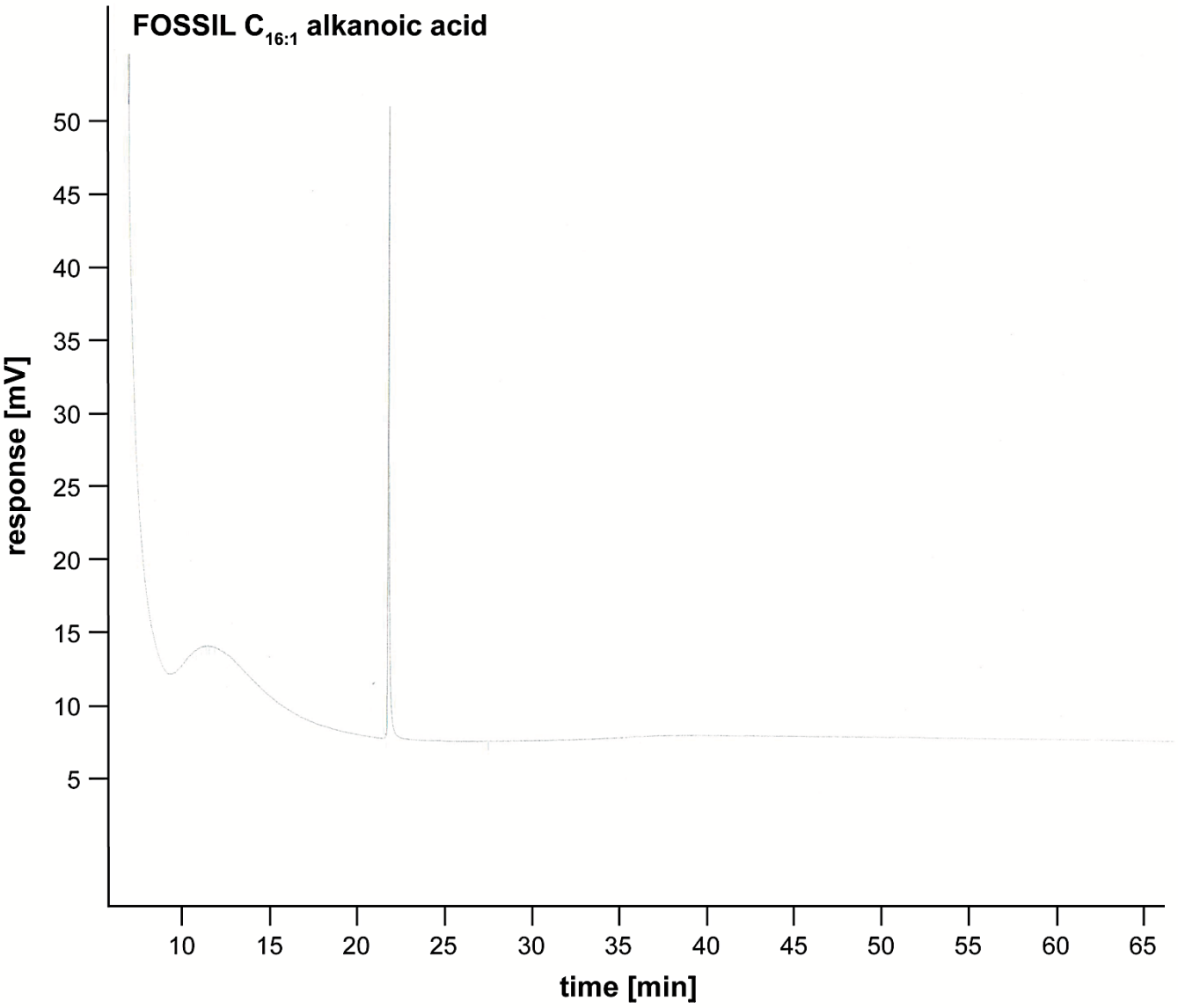

Fig S9. Chromatogram of the purified 'Fossil' $C_{16:1}$ alkanoic acid fraction. GC-based compound purity is 99.4%.

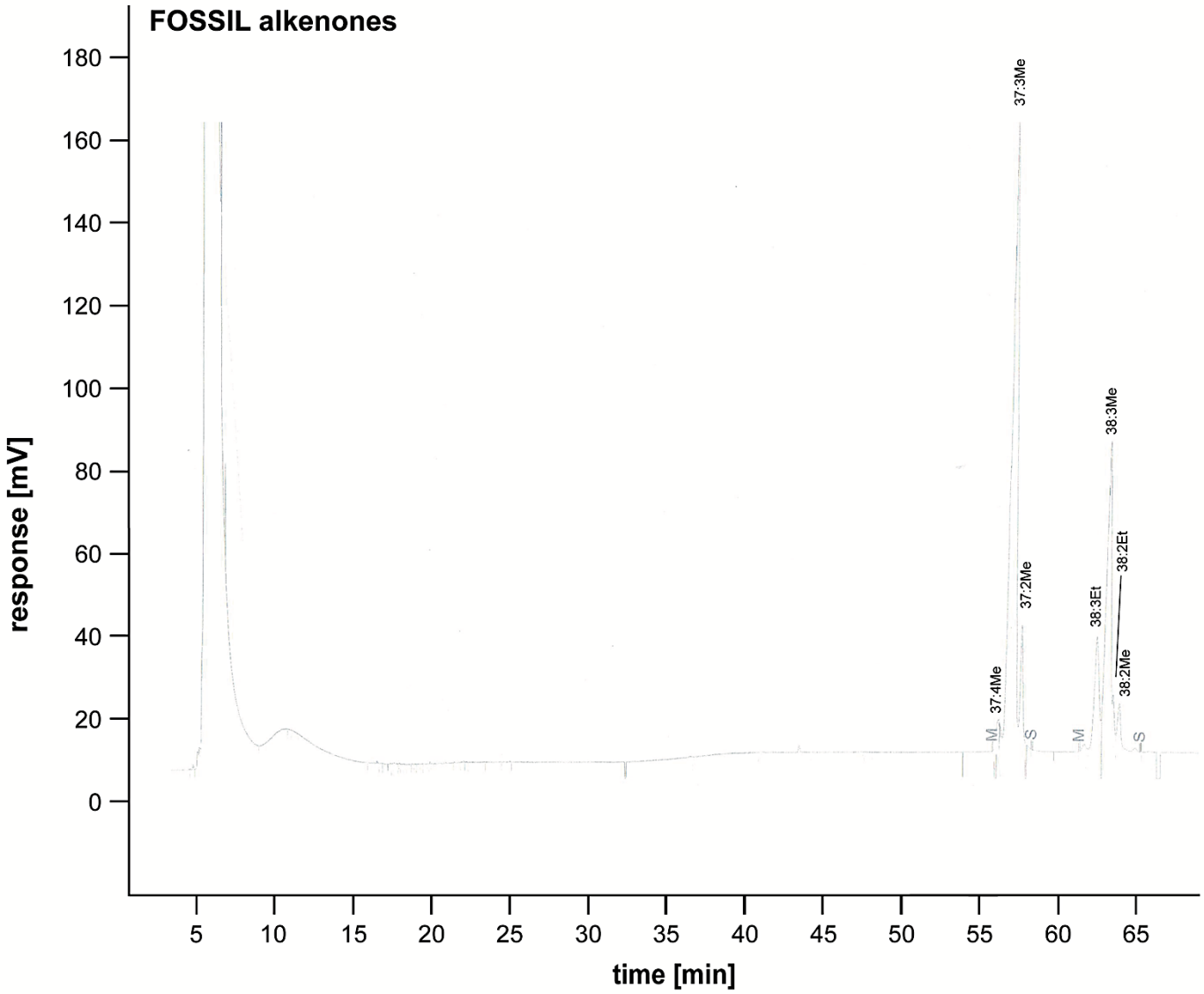

Fig S10. Chromatogram of the purified 'Fossil' alkenones fraction. GC-based compound-fraction purity is 99.8%.

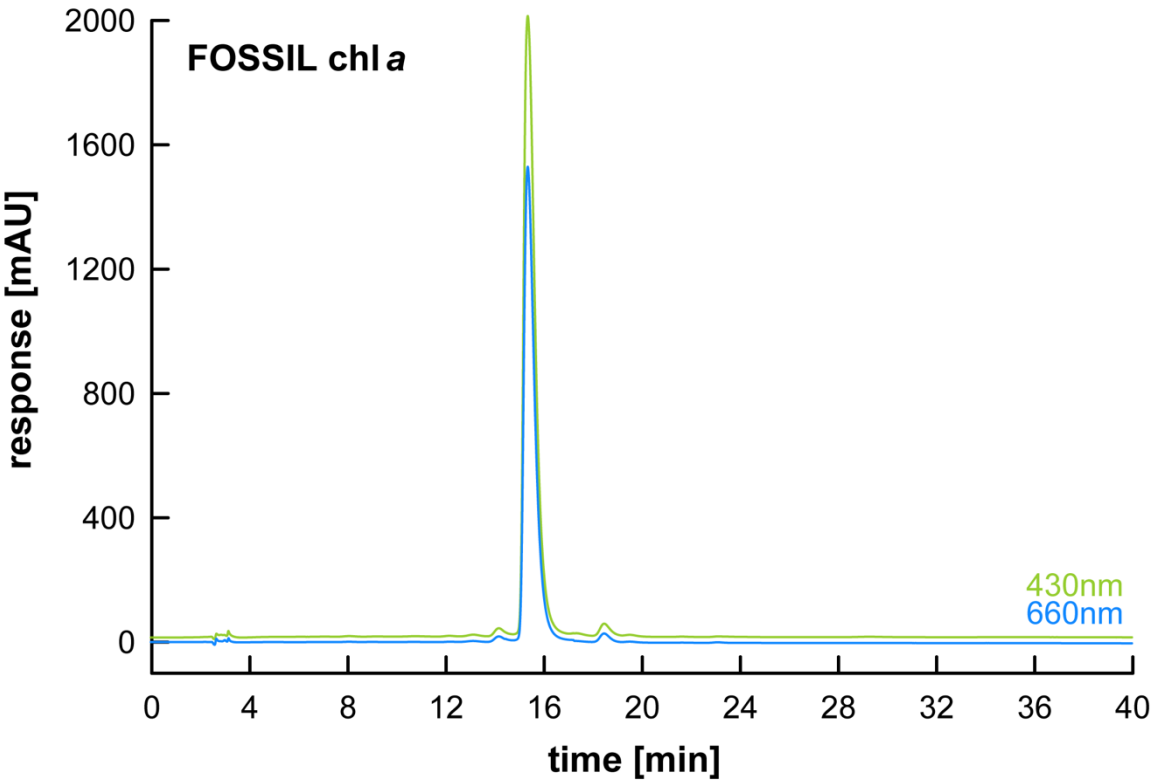

Fig S11. Chromatogram of the 'Fossil chlorophyll *a* fraction obtained from *E. huxleyi* after the first LC purification step.