Supplement of Biogeosciences, 14, 5029–5037, 2017
https://doi.org/10.5194/bg-14-5029-2017-supplement

Biogeosciences
Open Access

Supplement of

Differential photosynthetic responses of marine planktonic and benthic diatoms to ultraviolet radiation under various temperature regimes

Yaping Wu et al.

Correspondence to: Juntian Xu (jtxu@hhit.edu.cn)

Table S1 The statistical results of RM-ANOVA for the comparison of effective quantum yields under PAR and PAB at a single temperature level

species	Temperature type	Temperature level (°C)	df	F	p
Skeletonema sp	Acclimated	15	5	30.12	0.000
		20	5	8.89	0.000
		25	5	11.38	0.000
	Short term	25	5	9.78	0.000
		30	5	3.05	0.033
		35	5	0.74	0.604
Nitzschia sp	Acclimated	15	5	38.76	0.000
		20	5	10.09	0.000
		25	5	13.28	0.000
	Short term	25	5	11.85	0.000
		30	5	9.96	0.000
		35	5	5.42	0.003

Table S2 The statistical results of RM-ANOVA for effective quantum yields during light exposure under different temperature and radiation treatments.

Species	temperature increase	Factors	df	F	p
Skeletonema sp	15-25	time	5	431.0	0.000
		time*temperature	5	39.43	0.000
		time*light	5	36.17	0.000
		time*temperature*light	5	2.98	0.022
	20-30	time	5	532.46	0.000
		time*temperature	5	7.85	0.000
		time*light	5	6.39	0.000
		time*temperature*light	5	4.35	0.003
	25-35	time	5	1127.84	0.000
		time*temperature	5	135.11	0.000
		time*light	5	6.76	0.000
		time*temperature*light	5	2.46	0.049
Nitzschia sp	15-25	time	5	742.92	0.000
		time*temperature	5	19.46	0.000
		time*light	5	40.5	0.000
		time*temperature*light	5	2.5	0.046
	20-30	time	5	816.48	0.000
		time*temperature	5	11.12	0.000
		time*light	5	16.77	0.000
		time*temperature*light	5	3.26	0.015
	25-35	time	5	299.57	0.000
		time*temperature	5	4.16	0.004
		time*light	5	17.15	0.000
		time*temperature*light	5	1.61	0.178

Table S3 R square values for curve fitting with Kok model for independent replicates of the two species under different temperature and radiation treatments

Species	Radiation treatment	replicate No.	Temperature treatment (°C)					
			15	15-25	20	20-30	25	25-35
Skeletonema sp	PAR	1	0.98	0.85	0.74	0.72	0.93	0.96
	PAR	2	0.96	0.97	0.73	0.82	0.96	0.96
	PAR	3	0.97	0.89	0.80	0.75	0.98	0.97
	PAB	1	0.91	0.94	0.92	0.97	0.97	0.99
	PAB	2	0.94	0.95	0.87	0.94	0.96	0.97
	PAB	3	0.95	0.85	0.91	0.98	0.92	0.99
Nitzschia sp	PAR	1	0.77	0.84	0.78	0.96	0.87	0.98
	PAR	2	0.74	0.89	0.75	0.93	0.82	0.96
	PAR	3	0.74	0.84	0.73	0.86	0.88	0.90
	PAB	1	0.99	0.97	0.98	0.97	0.87	0.86
	PAB	2	0.98	0.93	0.95	0.95	0.89	0.86
	PAB	3	0.97	0.96	0.96	0.97	0.93	0.88

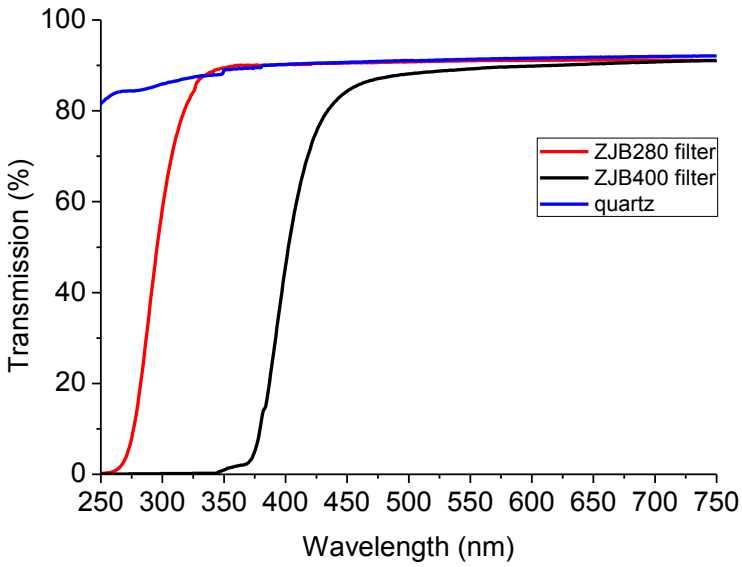

Fig S1The transmission spectra (in percentage) of different cut-off filters (ZJB280, ZJB400) and the quartz tube between 280 and 750 nm.

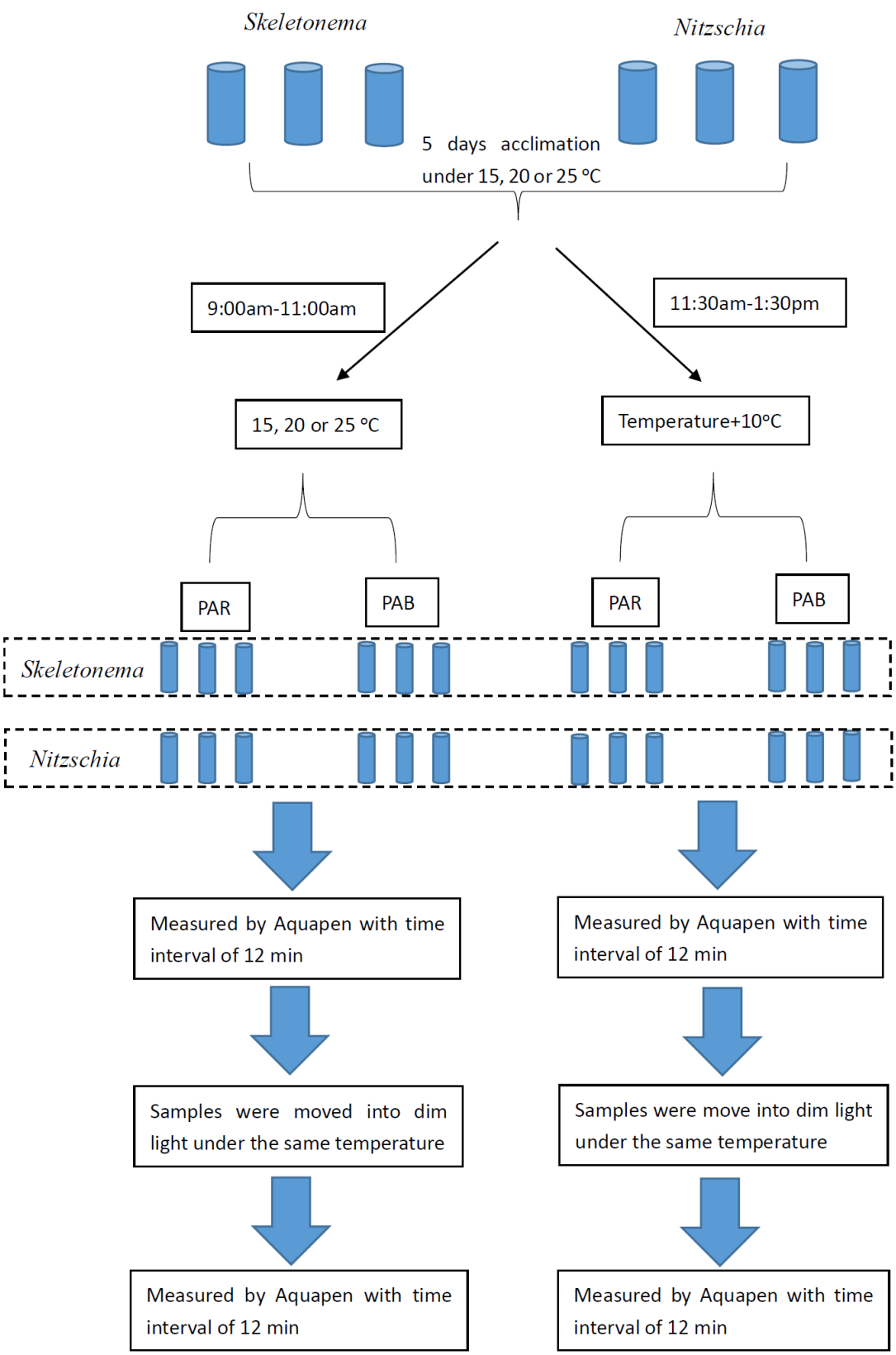

Fig S2 The illustration of the experimental design from culturing to light exposure experiments.

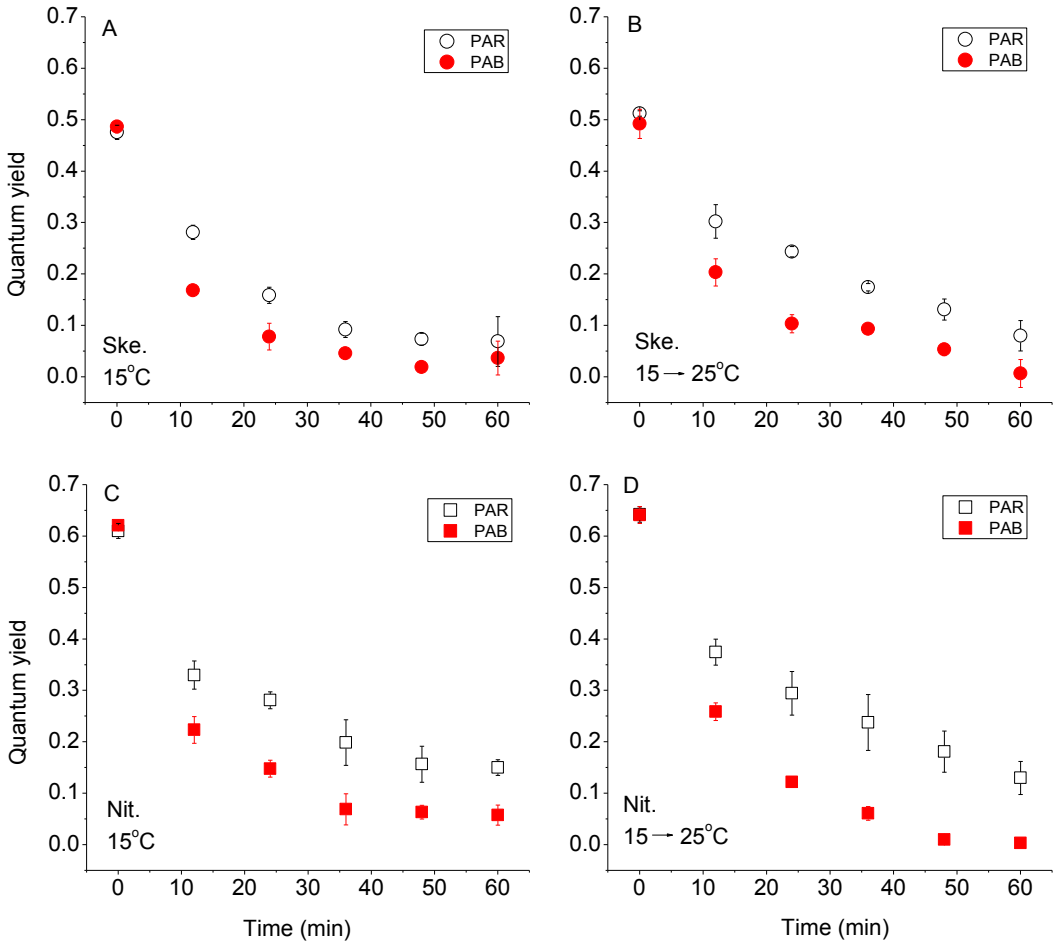

Fig S3 The quantum yields of 15 ℃ grown *Skeletonema sp.* and *Nitzschia sp.* under PAR or PAR+UVR (PAB) for 1 hour exposure in the presence of lincomycin, that were incubated and measured at 15 ℃ (A, C) or 25 ℃ (B, D) , vertical lines represent SD, n=3.

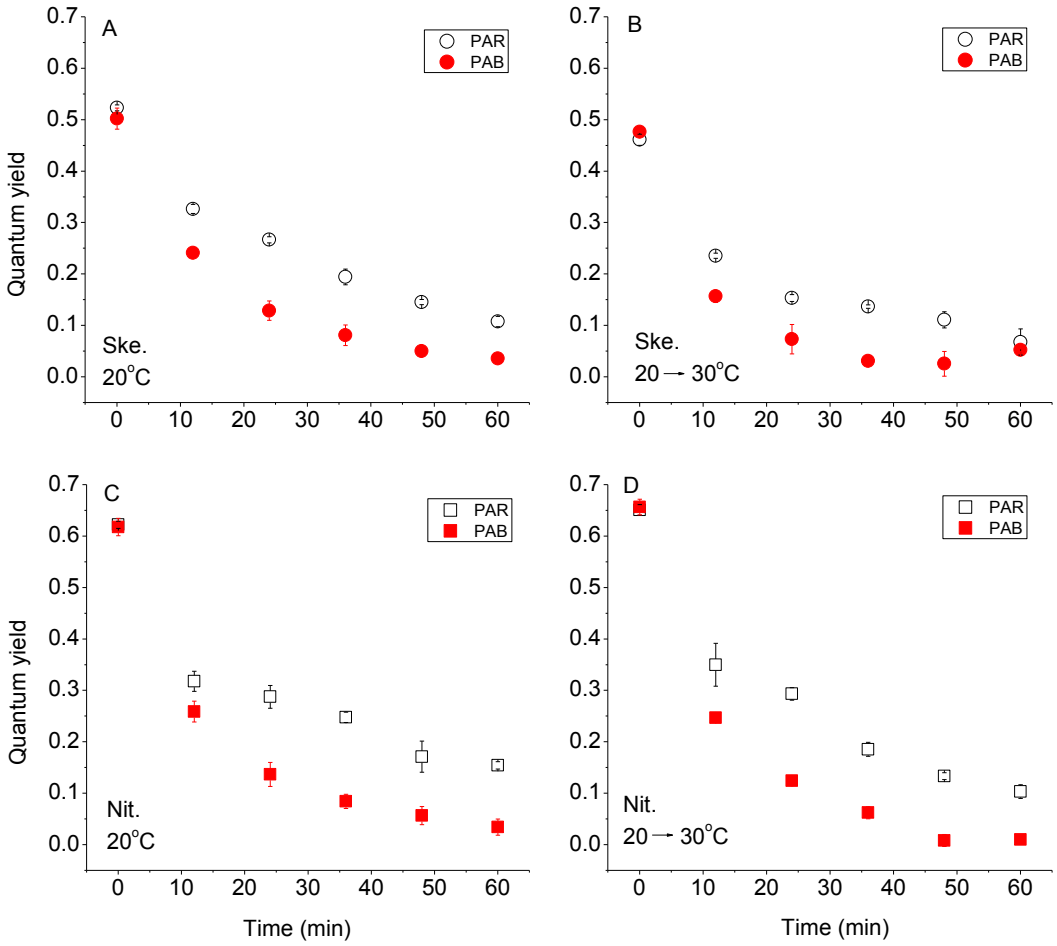

Fig S4 The quantum yields of 20 ℃ grown *Skeletonema sp.* and *Nitzschia sp.* under PAR or PAB for 1 hour exposure in the presence of lincomycin, that were incubated and measured at 20 ℃ (A, C) or 30 ℃ (B, D) , vertical lines represent SD, n=3.

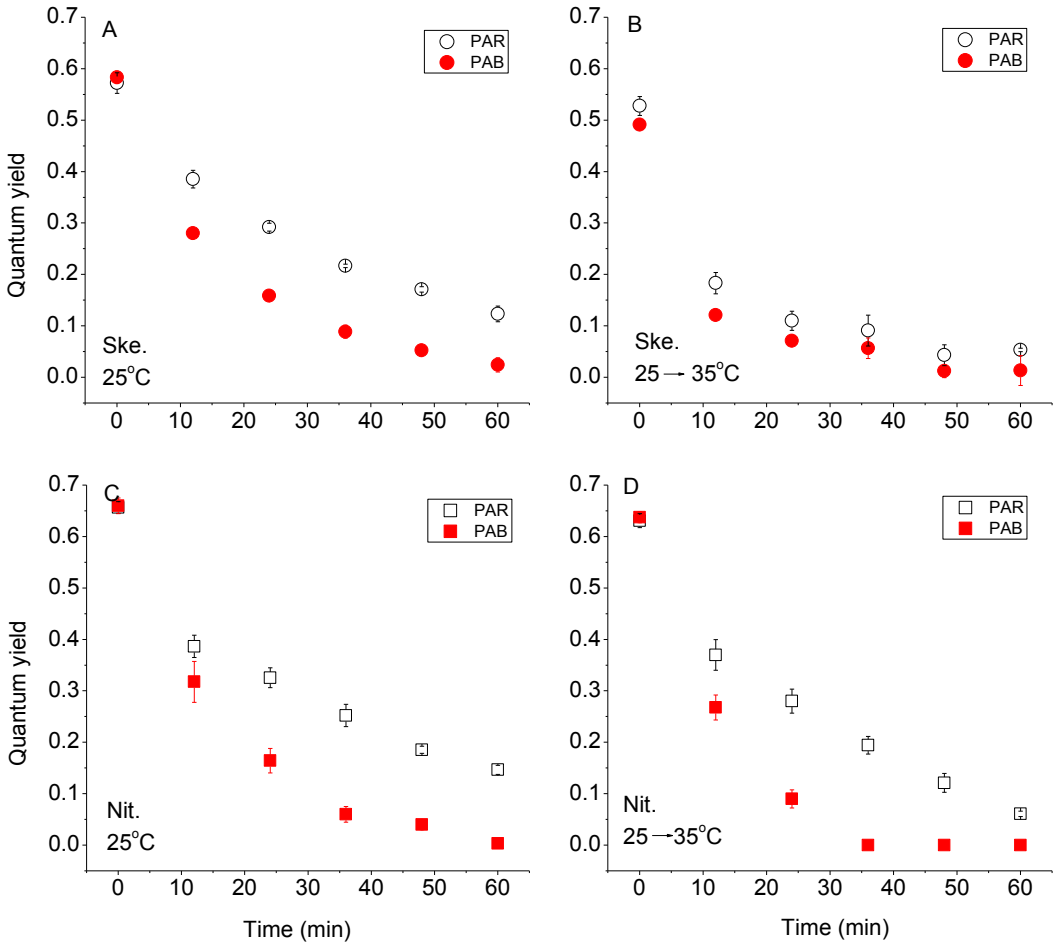

Fig S5 The quantum yields of 25 ℃ grown *Skeletonema sp.* and *Nitzschia sp.* under PAR or PAB for 1 hour exposure in the presence of lincomycin, that were incubated and measured at 25 ℃ (A, C) or 35 ℃ (B, D) , vertical lines represent SD, n=3.

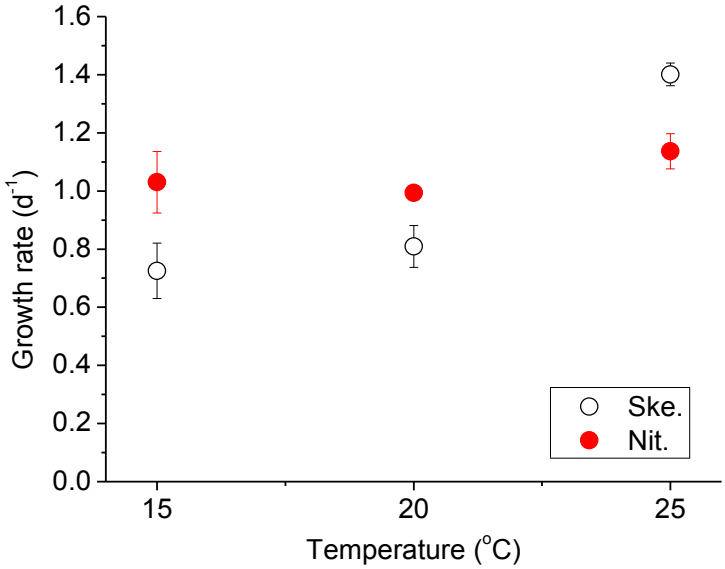

Fig S6 The specific growth rates of both species under different temperature levels, vertical lines represent SD, n=3.

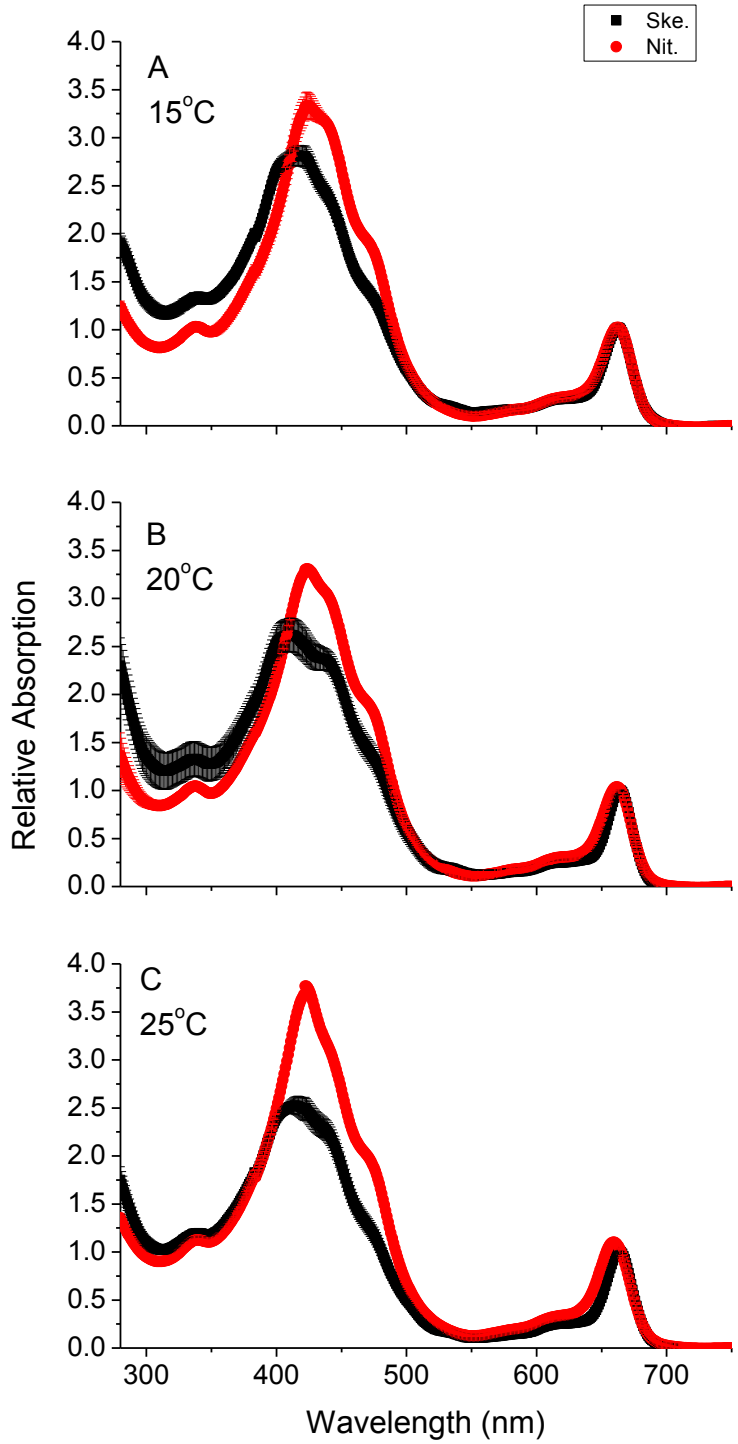

Fig S7 The absorption spectra of methanol extracts of *Skeletonema sp*. and *Nitzschia sp*. cultured under different temperature, spectra were normalized with value set as 1.0 at wavelength of 665nm, vertical lines represent SD, n=3.