

Figure S1 Detailed electrical layout of used UV irradiation system. PCB design UV LED panel (a) circuit diagram UV LED panel (b) PCB design of and constant current power supply (c) and circuit diagram constant current power supply (d).

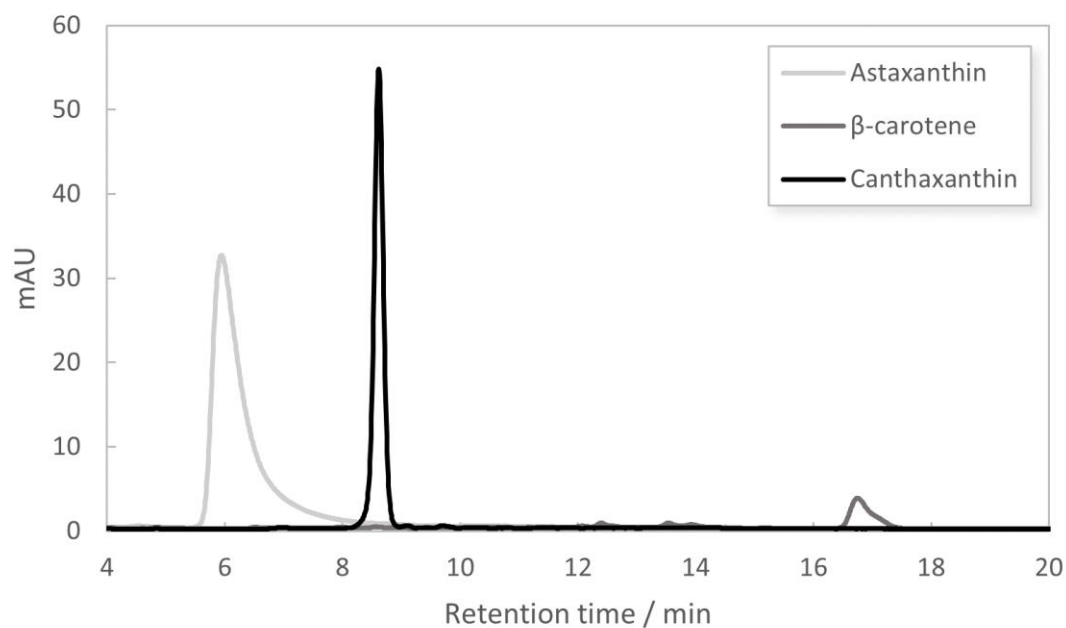


Figure S2 Section of the chromatogram of Astaxanthin, β -carotene and Canthaxanthin. The mean retention times of astaxanthin (480 nm), canthaxanthin (480 nm), and β -carotene (450 nm) could be detected after 6.0658, 8.6277 and 16.7835 min, respectively.

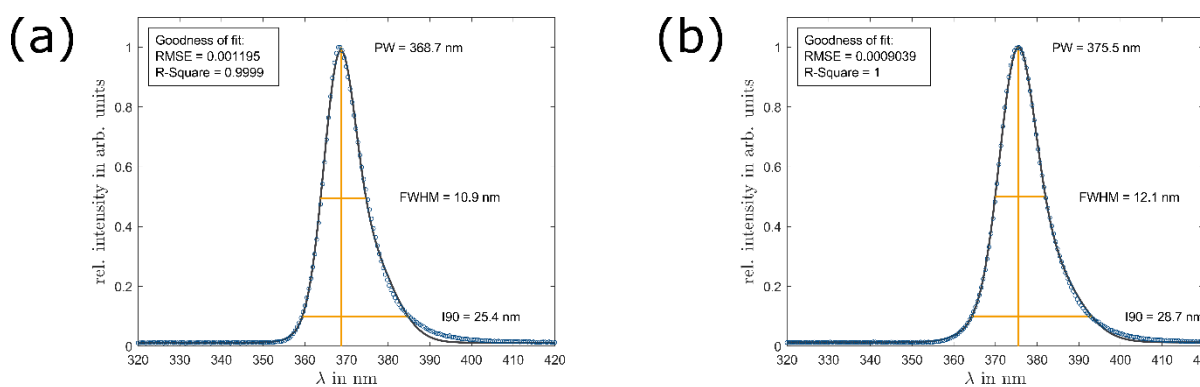


Figure S3 Spectral power distribution of the used UV-A LEDs including a nonlinear regression to determine relevant optical properties. By fitting a sum of Gaussian functions, the peak wavelength, the full width at half of the intensity maximum and full width at ten percent of the intensity maximum were calculated from the data. The measurement was performed with a spectrometer.

Results

Supplementary Table 1: Quantities of metabolites in $\mu\text{g mL}^{-1}$ extracted from the five terrestrial microalgal strains within 96 h of investigation. Concentrations are shown as mean $\pm$ *SD* ($n = 3$).

Strain	Target	Time in hours				
		0	24	48	72	96
V142	Astaxanthin	24.4 $\pm$ 3.6	23.3 $\pm$ 2.7	25.4 $\pm$ 3.2	24.6 $\pm$ 4.5	31.6 $\pm$ 11.2
	Canthaxanthin	8.8 $\pm$ 1.4	25.8 $\pm$ 4.3	46.6 $\pm$ 5.5	72.4 $\pm$ 16.2	45.7 $\pm$ 6.0
	β -carotene	22.0 $\pm$ 9.0	26.6 $\pm$ 12.4	52.0 $\pm$ 19.5	72.4 $\pm$ 34.9	61.0 $\pm$ 17.7
IB256	Astaxanthin	u.d.	u.d.	u.d.	u.d.	u.d.
	Canthaxanthin	25.6 $\pm$ 10.0	31.4 $\pm$ 6.2	48.5 $\pm$ 6.0	77.5 $\pm$ 30.6	38.9 $\pm$ 10.0
	β -carotene	62.0 $\pm$ 14.2	50.8 $\pm$ 3.0	66.5 $\pm$ 8.7	74.3 $\pm$ 25.7	81.9 $\pm$ 8.3
V46	Astaxanthin	u.d.	u.d.	u.d.	u.d.	u.d.
	Canthaxanthin	5.0 $\pm$ 0.3	8.8 $\pm$ 1.5	13.3 $\pm$ 1.5	24.3 $\pm$ 11.0	10.3 $\pm$ 4.3
	β -carotene	8.3 $\pm$ 0.8	13.7 $\pm$ 7.0	12.4 $\pm$ 5.8	13.5 $\pm$ 9.6	5.3 $\pm$ 2.2
T3	Astaxanthin	10.9 $\pm$ 0.0	11.2 $\pm$ 0.3	11.4 $\pm$ 0.3	11.3 $\pm$ 0.3	11.5 $\pm$ 0.2
	Canthaxanthin	18.8 $\pm$ 5.5	23.0 $\pm$ 8.0	46.0 $\pm$ 11.2	45.8 $\pm$ 13.7	34.9 $\pm$ 4.6
	β -carotene	20.6 $\pm$ 7.1	26.0 $\pm$ 9.5	30.4 $\pm$ 12.1	22.7 $\pm$ 13.3	34.1 $\pm$ 15.6
V224	Astaxanthin	10.6 $\pm$ 0.0	10.6 $\pm$ 0.0	10.6 $\pm$ 0.001	10.6 $\pm$ 0.0	10.6 $\pm$ 0.0
	Canthaxanthin	4.4 $\pm$ 0.1	4.7 $\pm$ 0.5	4.4 $\pm$ 0.2	4.8 $\pm$ 0.6	4.2 $\pm$ 0.2
	β -carotene	1.2 $\pm$ 0.3	1.0 $\pm$ 0.2	0.9 $\pm$ 0.2	1.0 $\pm$ 0.2	0.9 $\pm$ 0.0

u.d.: under detection limit (< 1.2)