Supplementary Information

Generation of Volatile Compounds from Carotenoids of *Dunaliella bardawil* Algae by Water Bath Heating and Microwave Irradiation

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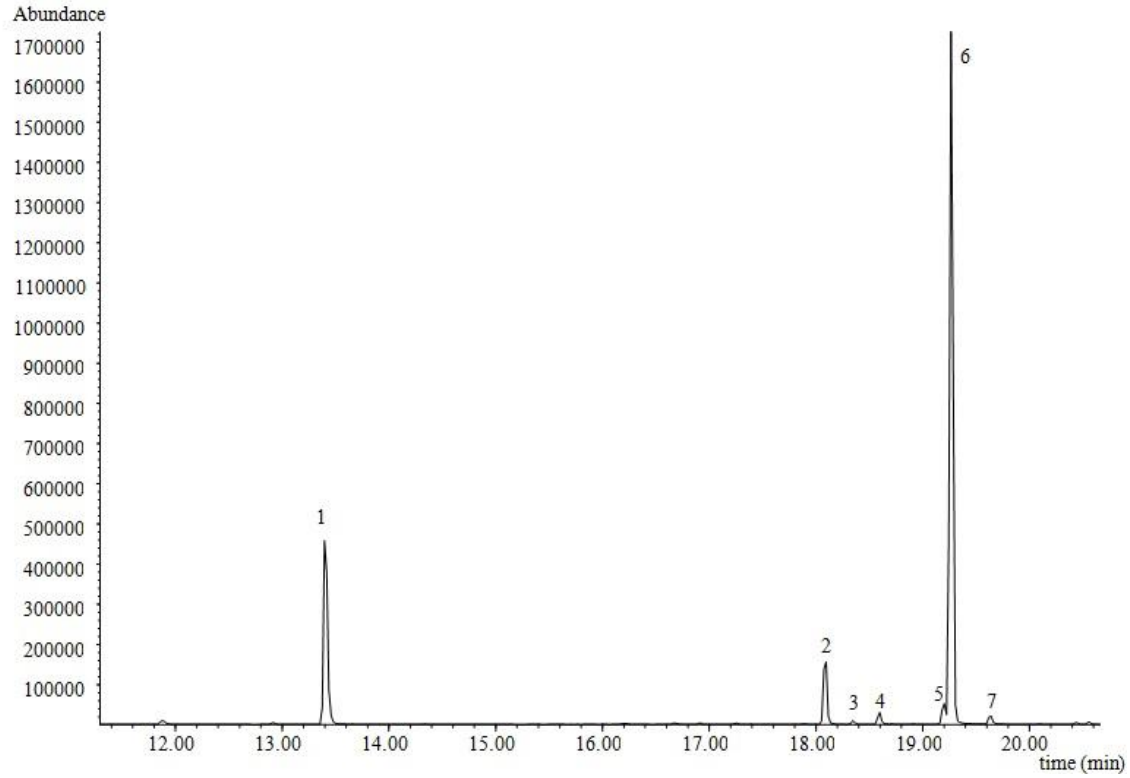

Figure S1. Chromatogram of volatile compounds present in *D. bardawil* biomass (BC2) obtained by GC-qMS. 1: β-cyclocitral; 2: α-ionone; 3: 7,8-dihydro-β-ionone; 4: *trans*-geranyl acetone; 5: 5,6-epoxy-β-ionone; 6: β-ionone; 7: dihydroactinidiolide.

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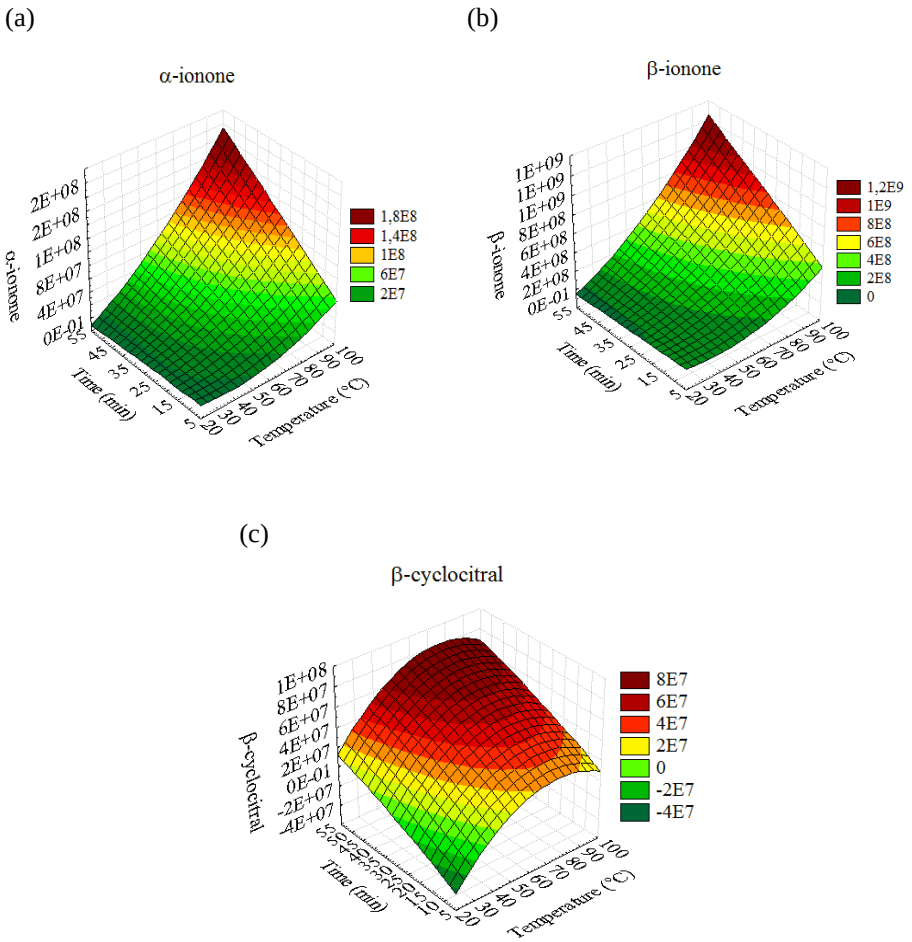

Figure S2. Response surface in absolute area obtained by GC-MS (SIM) for (a) α-ionone; (b) β-ionone; (c) β-cyclocitral as a function of temperature and time in a DVB/CAR/PDMS SPME fiber.

(a) (b)

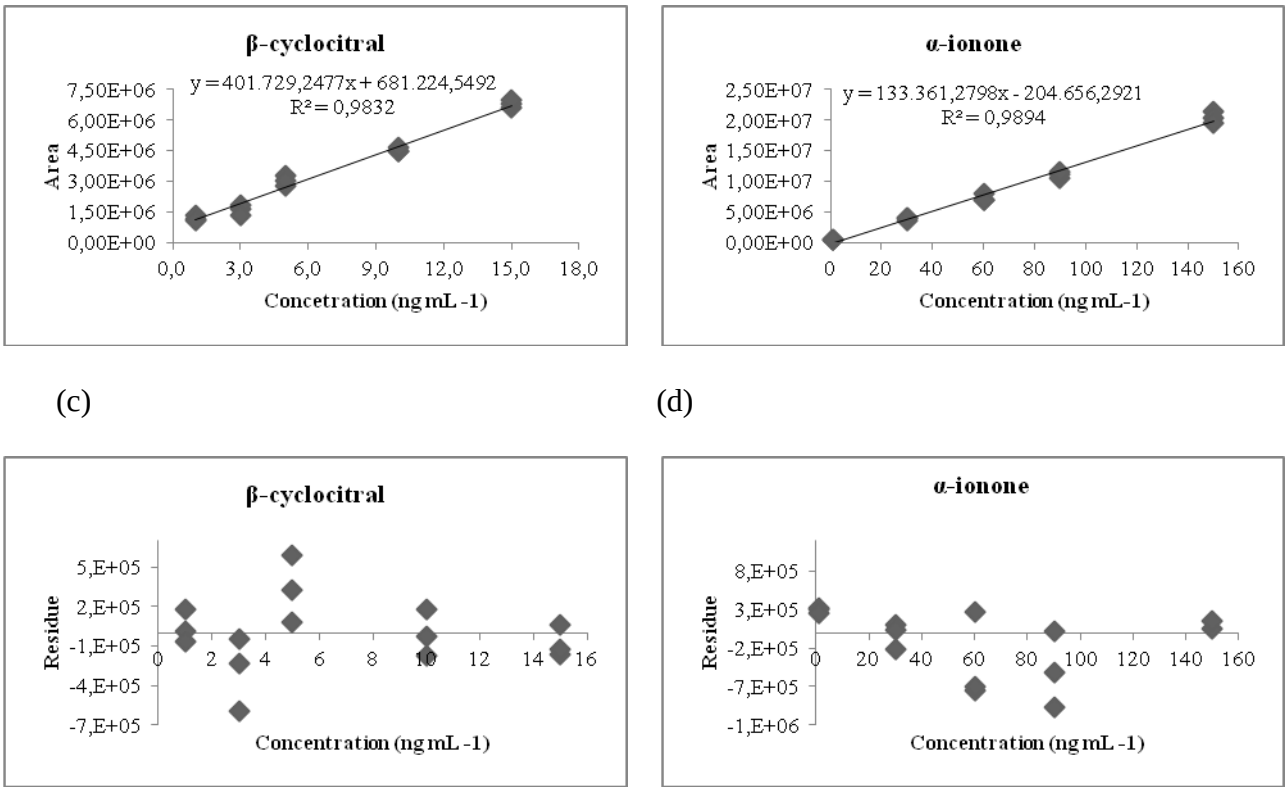

Figure S3. Calibration curves and residual plots for β-cyclocitral (a and c) and α-ionone (b and d), obtained by GC-qMS (SIM).

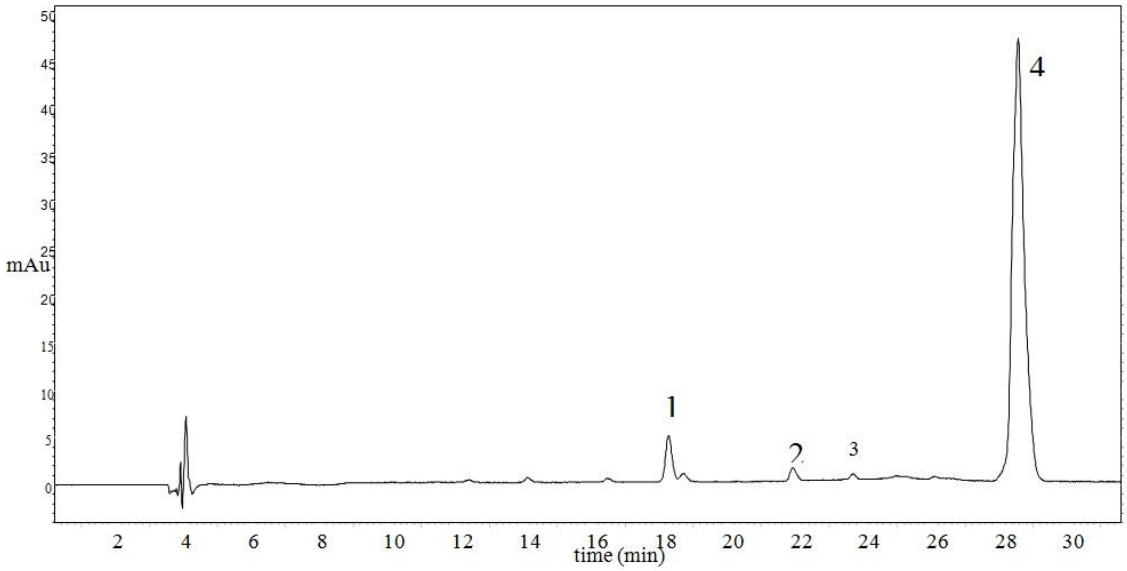

Figure S4. Typical chromatographic profile of *D. bardawil* biomass by HPLC-UV (460 nm). Lutein (1); chlorophyll b (2); chlorophyll a (3); β-carotene (4).

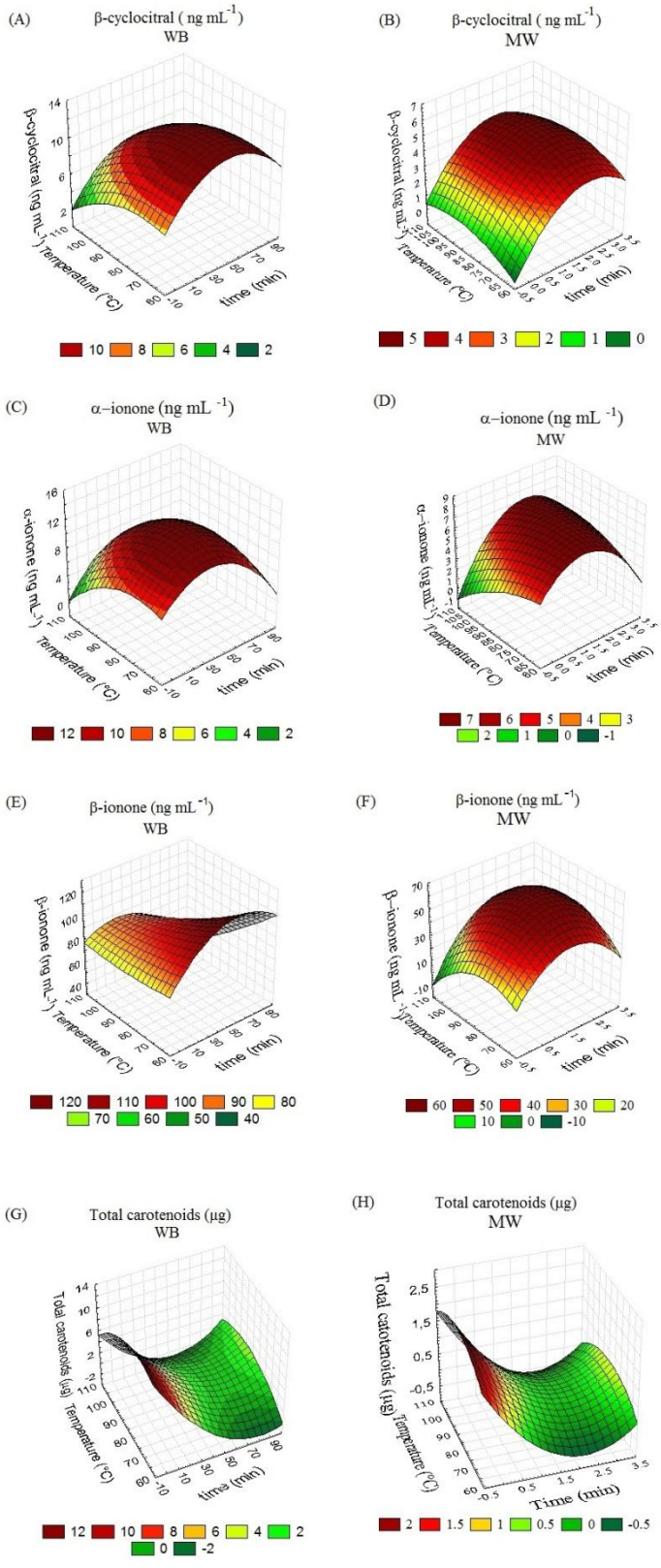

Figure S5. Response surface of the concentration of: (a) β-cyclocitral BU; (b) β-cyclocitral MW; (c) α-ionone BU; (d) α-ionone MW; (e) β-ionone BU; (f) β-ionone MW; (g) total carotenoids WB; (h) total carotenoids MW as a function of temperature and time employed for degradation of carotenoids from *D. bardawil*.

Table S1. Concentration (ng mL^{-1}) of the major volatile compounds produced on the conditions of the central points from MW and WB experiments

Volatile compound	Concentration / (ng mL^{-1})	
	MW (1.5 min)	WB (45 min)
β-Cyclocitral	4.46 ± 0.34	12.83 ± 0.11
α-Ionone	5.37 ± 0.85	15.27 ± 0.17
β-Ionone	67.56 ± 0.57	115.67 ± 0.63

MW: microwave irradiation; WB: water bath heating.