

Table S1. Sequences and hybridization temperatures (°C) of primers used for the cloning and amplification of targeted genes in *P. stutzeri* (*Ps*) and *D. shibae* (*Ds*).

Target Gene	Primer Name	Primer sequence 5' → 3'	Fragment size (pb)	PCR hybridization temperature (°C)
16s <i>Ps</i>	PS_16S-F	AGC-TAG-TTG-GTG-AGG-TAA-AGG	291	60.0
	PS_16S-R	GTA-TTA-CCG-CGG-CTG-CTG-GCA		
<i>mutY Ps</i>	PS_mutY-F	GGC-TAC-TTC-GAC-CGC-TTC-AT	74	60.0
	PS_mutY-R	AGC-ACT-TCA-TCT-TCC-TCG-GC		
<i>rpoH Ps</i>	PS_rpoH-F	GGT-CTG-ATG-AAG-GCG-GTC-AA	209	60.0
	PS_rpoH-R	ACC-TCA-TCG-TTG-TTC-AGC-CA		
<i>chrR Ps</i>	PS_chrR-F	CGA-GTT-GGA-ATT-ACG-TCG-CG	109	60.0
	PS_chrR-R	CGG-CTC-GAT-CAG-TTC-CTT-GT		
<i>rpoD Ps</i>	PS_rpoD-F	CAG-TCC-CGC-CTC-AAA-GAG-TT	148	60.0
	PS_rpoD-R	CGT-TGA-TGC-CCA-TGT-CGT-TG		
16s <i>Ds</i>	Rhodo 240F	GGC-CCG-CGT-TGG-ATF-AGR-TA	276	62.0
	Univ 516R	GTD-TTA-CCG-CGG-CKG-CTG-RCA		
<i>mutY Ds</i>	DS_mutY-F	GGC-TCT-CCG-AGG-TGA-TGC-TG	179	62.0
	DS_mutY-R	CGC-GCA-TTT-CAG-CAG-GTT-G		
<i>rpoH Ds</i>	DS_rpoH-F	ATA-TAC-CAA-TCT-TCC-GGC-CCC-C	106	60.0
	DS_rpoH-R	GGC-CAG-CAT-GTA-TTC-CTC-TTC-G		
<i>chrR Ds</i>	DS_chrR-F	AGC-TGC-CCA-AAT-CCA-TGA-CA	97	62.0
	DS_chrR-R	TTC-ACA-TCC-TCC-ACA-TCG-CC		
<i>rpoD Ds</i>	DS_rpoD-F	GCA-AGA-CCG-ATG-ACC-AGG-AC	150	60.0
	DS_rpoD-R	TCT-GTT-CCG-AGC-TGA-CCT-GA		

All the primers have been designated from the complete genome of *P. stutzeri* (ACCESSION NUMBER CP002881) and *D. shibae* (ACCESSION NUMBER CP000830).

Table S2 : ANOVA analyses of data comparing the effects of *Thalassiosira* sp. input with solar irradiance, UV, solar light and PAR light on the vaccenic-acid oxidation product and the level of expression of *mutY*, *chrR* and *rpoH* (threshold, $p < 0.005$).

	Source	DDL	Somme des carrés	Moyenne des carrés	F	Pr > F
P. Stutzeri	Thalassiosira sp. effect with solar Irradiance	1	9615978,78	9615978,78	82,91	0,00000
	Vaccenique Ac oxidation product					
	specific effect of UV	1	19299253,72	19299253,72	23,47	0,00008
	solar Light dose	1	5143869,38	5143869,38	9,13	0,01287
	PAR Light dose	1	2366453,91	2366453,91	4,78	0,05358
	Thalassiosira sp. effect with solar Irradiance	2	12,30	6,15	2,81	0,08675
	mutY					
	specific effect of UV	3	0,76	0,25	0,17	0,91785
	solar Light dose	1	14,41	14,41	12,99	0,00482
	PAR Light dose	1	0,94	0,94	1,99	0,18852
	Thalassiosira sp. effect with solar Irradiance	2	1,30	0,65	0,33	0,72188
	chrR					
	specific effect of UV	3	34,81	11,60	6,37	0,00331
	solar Light dose	1	4,46	4,46	1,27	0,28665
	PAR Light dose	1	0,94	0,94	1,99	0,18852
	Thalassiosira sp. effect with solar Irradiance	2	23,80	11,90	4,46	0,02664
D. Shibaie	rpoH					
	specific effect of UV	3	0,99	0,33	0,19	0,90177
	solar Light dose	1	10,79	10,79	5,39	0,04269
	PAR Light dose	1	0,78	0,78	1,96	0,19213
	Thalassiosira sp. effect with solar Irradiance	1	1142347,63	1142347,63	16,31	0,00237
	Vaccenique Ac oxidation product					
	specific effect of UV	1	833878,21	833878,21	0,73	0,40090
	solar Light dose	1	1557444,57	1557444,57	2,00	0,18718
	PAR Light dose	1	5287382,51	5287382,51	5,09	0,04769
	Thalassiosira sp. effect with solar Irradiance	2	16,22	8,11	24,56	0,00001
	mutY					
	specific effect of UV	3	129,74	43,25	151,30	0,00000
	solar Light dose	1	2,99	2,99	12,68	0,00517
	PAR Light dose	1	0,00	0,00	0,00	0,98159
	Thalassiosira sp. effect with solar Irradiance	2	9,61	4,81	23,14	0,00001
	chrR					
	specific effect of UV	3	828,10	276,03	4090,43	0,00000
	solar Light dose	1	0,60	0,60	6,99	0,02458
	PAR Light dose	1	0,01	0,01	0,22	0,65006
	Thalassiosira sp. effect with solar Irradiance	2	1,10	0,55	1,96	0,17018
	rpoH					
	specific effect of UV	3	117,53	39,18	236,09	0,00000
	solar Light dose	1	0,06	0,06	0,24	0,63195
	PAR Light dose	1	0,35	0,35	4,73	0,05478