– Additional file 1 –

Heterologous production and characterization of a pyomelanin of Antarctic *Pseudomonas* sp. ANT_H4 – a metabolite protecting against UV and free radicals, interacting with iron from minerals and exhibiting priming properties toward plant hairy roots

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Table S1. GC-MS data (retention times and characteristic ions of mass spectra) of identified steroids and triterpenoids

Compound	Formula	Molecular weight	Retention time [min]	Mass spectrum *m/z* (relative intensity)
cholesterol	$C_{27}H_{46}O$	386.6	31.06	386 (26), 107 (50), 105 (48), 91 (57), 81 (54), 79 (46), 69 (47), 57 (87), 55 (73), 43 (100), 41 (55)
campesterol	$C_{28}H_{48}O$	400.6	33.59	400 (30), 107 (51), 105 (55), 95 (49), 83 (45), 81 (64), 71 (62), 57 (77), 55 (77), 43 (100), 41 (52)
stigmasterol	$C_{29}H_{48}O$	412.6	34.52	412 (36), 145 (64), 107 (52), 95 (100), 83 (66), 81 (90), 78 (60), 69 (67), 67 (85), 55 (69)
sitosterol	$C_{29}H_{50}O$	414.7	36.15	414 (29), 145 (54), 107 (59), 105 (60), 95 (54), 91 (49), 81 (57), 57 (68), 55 (70), 43 (100)
isofucosterol	$C_{29}H_{48}O$	412.3	36.78	412 (5), 314 (100), 105 (47), 95 (50), 91 (42), 83 (40), 81 (51), 69 (61), 55 (96), 43 (49)
β-amyrin	$C_{30}H_{50}O$	426.7	37.13	426 (27), 219 (18), 218 (100), 203 (49), 189 (17), 135 (11), 109 (13), 105 (12), 95 (15), 81 (18), 69 (14)
α-amyrin	$C_{30}H_{50}O$	426.7	38.62	426 (4), 219 (18), 218 (100), 203 (20), 189 (19), 135 (17), 133 (15), 122 (16), 119 (15), 95 (16)
tremulone	$C_{29}H_{46}O$	410.7	39.20	410 (32), 187 (27), 174 (100), 161 (37), 159 (26), 91 (28), 57 (28), 55 (37), 43 (44), 41 (28)
24-methylenecycloartanol	$C_{30}H_{50}O$	426.7	40.50	440 (5), 121 (60), 119 (55), 109 (62), 107 (76), 105 (57), 95 (98), 93 (64), 81 (72), 69 (99), 55 (100)
oleanolic acid methyl ester	$C_{31}H_{50}O_3$	470.1	46.37	470 (1), 262 (48), 207 (13), 204 (16), 203 (100), 202 (21), 189 (22), 133 (17), 119 (13), 105 (14)

Table S2. The content of steroids and triterpenoid alcohols in hairy roots tissue

Compound	Content [μg/g DW ± SD]			
	days			
	7		14	
	C	E	C	E
cholesterol	19.19±3.64	14.69±1.16	30.31±0.78	43.12±1.87
campesterol	126.80±10.05	231.32±5.96	160.69±6.98	190.97±8.29
stigmasterol	848.76±67.30	1284.40±33.10	1342.80±58.29	1609.26±69.86
sitosterol	492.72±39.07	799.88±20.61	309.85±13.45	461.86±20.05
isofucosterol	251.18±19.92	412.29±10.63	299.95±13.02	348.98±15.15
β-amyrin	94.31±7.48	90.02±2.32	25.15±1.09	123.53±5.36
α-amyrin	85.21±6.76	135.32±3.49	280.63±12.18	361.45±15.69
tremulone	163.86±12.99	106.80±2.75	173.77±7.54	380.70±16.53
24-methylene-cycloartanol	72.39±5.74	118.85±3.06	104.84±4.55	127.14±5.52
Total	**2154.41**	**3193.56**	**2727.99**	**3647.00**

Table S3. The content of sterol glycosides in hairy roots tissue

Compound	Content [μg/g DW ± SD]			
	days			
	7		14	
	C	E	C	E
cholesterol	66.86±14.27	50.61±10.80	68.59±14.64	62.99±13.44
campesterol	75.02±16.01	89.11±19.01	128.20±27.35	121.47±25.92
stigmasterol	59.24±12.64	73.47±15.68	130.15±27.77	81.75±17.44
sitosterol	55.44±11.83	75.97±16.21	67.37±14.38	58.18±12.41
Total	**256.55**	**289.16**	**394.31**	**324.39**

Table S4. Free oleanolic acid (OA) content in hairy roots tissue

Compound	Content [μg/g DW ± SD]			
	days			
	7		14	
	C	E	C	E
OA	87.03±18.57	1616.40±307.08	176.25±37.61	16037.34±3046.72

Table S5. Oleanolic acid saponins (OA) released to the medium

Compound	Content [mg/L×g DW ± SD]			
	days			
	7		14	
	C	E	C	E
OA	1.45±0.27	1.98±0.38	2.38±0.45	2.91±0.69

Table S6. Oleanolic acid saponins (OA) content in hairy roots tissue.

Compound	Content [μg/g DW ± SD]			
	days			
	7		14	
	C	E	C	E
OA	313.30±66.85	116.27±24.81	409.77±87.44	139.82±29.83