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Supplement of

Turnover of microbial groups and cell components in soil: ^{13}C analysis of cellular biomarkers

Anna Gunina et al.

Correspondence to: Anna Gunina (guninaann@gmail.com)

Calculation the ^{13}C enrichment into amino sugars of living cells

To estimate the ^{13}C enrichment into amino sugars of living cells, we first calculated the amount of amino sugars in the living MB pool based on the fatty acids content. Assuming that PLFAs are present only in living biomass, and that the ratio of fatty acids to amino sugars in living biomass is about 0.23 (Lengeler et al., 1999), we estimated the amount of amino sugars in living MB to be 0.20 µmol g^{-1} soil fatty acids/0.23 = 0.87 µmol g^{-1} soil. The estimated percentage of amino sugars in living biomass from the total amino sugar pool was 0.87/7.70 (total AS (µmol g^{-1} soil))*100 = 11%.

To calculate the ^{13}C enrichment in amino sugars for the first sampling point, it was assumed that all replaced C is still contained within living MB after three days of glucose C utilisation. Total tracer recovery into amino sugars consisted of 0.00071 µmol glucose derived ^{13}C in amino sugars g^{-1} soil/0.87 (µmol amino sugars g^{-1} soil)*7 (mean amount of C atoms in amino sugars)*100 = 0.57% of the C pool.

Table S1.

Results of factor analysis: grouping of fatty acids derived from factor loadings and PLFA literature. G+1 and G+2 are gram positive group one and two, respectively; G-1 and G-2 are gram-negative group one and two, respectively; 16:1ω5 - saprotrophic fungi, Ac – actinomycetes.

Fatty acids	Factor 1	Factor 2	Factor 3	Factor 4	Microbial groups
i15:0	**-0.78**	0.20	-0.21	-0.51	
a15:0	**-0.65**	0.07	-0.17	-0.63	
i16:0	**-0.94**	-0.20	0.09	-0.16	G+1
i17:0	**-0.98**	0.02	0.10	0.02	
a17:0	**-0.97**	0.04	0.17	0.01	
10Me16:0	**-0.95**	0.06	0.02	0.14	Ac
10Me18:0	**-0.97**	-0.08	0.06	0.09	
18:1w7c	**0.92**	-0.11	0.14	-0.03	G-1
16:1w7c	0.33	**0.78**	-0.01	-0.19	G-2
18:1w9c	-0.33	**0.85**	0.18	0.24	
16:1w5c	0.11	**0.89**	0.06	-0.21	16:1w5c
18:2w6,9	0.22	**-0.54**	-0.23	0.42	Fungi
i14:0	0.00	-0.04	**-0.93**	0.06	G+2
a14:0	0.06	-0.08	**-0.88**	0.03	

Table S2.

Absolute abundance (in mg per kg dry soil) of the fatty acids of the microbial groups, classified by factor analysis (factor loadings see Supplementary Table 1). Data present means and standard errors.

Microbial groups	Microbial groups content, mg kg^{-1} soil		
	Day 3	Day 10	Day 50
G-1	5.1±0.6	9.1±1.7	20.6*±4.6
G-2	5.3±0.6	9.0±2.3	7.8±1
G+1	7.1±1.3	10.9±2.4	5.8±0.9
G+2	0.6±0.2	1.4±0.5	n.d.
Ac	3.7±0.5	4.3±0.7	1.2*±0.2
16:1w5c	1.5±0.2	2.6±0.9	2.4±0.3
Fungi	1.5±0.2	0.9±0.3	1.5±0.2

n.a. not available.

* Significantly different contents of microbial PLFAs, $p<0.05$.

Table S3.

Content of PLFAs and isotopic signatures for the 3 sampling points. Data present mean values.

PLFAs	3 days		10 days		50 days	
	PLFA, µg g^{-1} soil	$\delta^{13}C/^{12}C$, ‰	PLFA, µg g^{-1} soil	$\delta^{13}C/^{12}C$, ‰	PLFA, µg g^{-1} soil	$\delta^{13}C/^{12}C$, ‰
i14:0	0.25	1.60	0.90	-20.59	n.a.	n.a.
a14:0	0.01	24.02	0.68	26.55	n.a.	n.a.
14:1w5c	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14:0	0.47	-10.29	1.23	-9.45	0.64	-15.76
i15:0	2.50	1.71	4.99	-11.78	2.89	-10.11
a15:0	1.71	3.38	3.23	-7.72	2.13	-9.27
15:0	0.39	-9.00	0.25	-13.56	n.a.	n.a.
i16:0	1.07	43.29	1.30	19.87	0.86	11.33
a16:0	n.a.	n.a.	0.03	-30.76	n.a.	n.a.
16:1w7c	2.39	2.08	4.07	-11.80	3.80	-6.78
16:1w5c	1.51	-27.48	2.60	-29.72	2.52	-17.14
16:0	5.90	12.86	9.68	0.11	6.38	-5.71
10Me16:0	1.84	-33.56	2.51	-35.68	0.68	-21.61
i17:0	0.86	-5.22	0.84	-17.84	0.15	-13.98
a17:0	0.68	5.02	0.57	-12.28	0.13	-9.29
cy17:0	0.66	-30.16	1.47	-29.17	1.45	-16.61
17:0	0.47	32.65	0.20	3.29	n.a.	n.a.
18:2w6,9	0.00	-9.13	0.94	-20.19	1.42	-10.71
18:1w9c	4.38	42.70	4.89	13.39	3.74	5.63
18:1w7c	5.72	19.25	9.05	-1.54	n.a.	n.a.
18:0	1.30	3.82	1.33	-14.72	0.44	-3.88
10Me18:0	1.48	29.00	1.74	33.62	0.31	41.38
cy19:0	2.23	-29.72	6.33	-32.62	4.92	-29.43
20:4w6c	1.51	-40.59	0.09	-42.11	n.a.	n.a.
20:1w9c	1.31	-35.04	0.18	-16.14	n.a.	n.a.
20:0	1.01	-30.50	n.a.	n.a.	n.a.	n.a.

n.a. Data not available.