Corrigendum

The production of myco-diesel hydrocarbons and their derivatives by the endophytic fungus *Gliocladium roseum* (NRRL 50072)

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Microbiology (2008), 154, part 11, 3319–3328.

The authors would like to note that technical errors occurred in the above report.

In the report, in order to determine which volatile compounds were produced by the fungus, the volatile organic compounds (VOCs) found in the GC-MS analyses of controls were removed from the list of VOCs appearing in the flask supporting fungal growth as done previously (Strobel *et al.*, 2001). However, an examination of this approach has revealed that it was inaccurate for the study. The automated library search results generated from the NIST 2005 database spectral search were used as the only means of compound comparison between fungal products and those of the control. Due to the similarity of many alkane fragmentation patterns the automated search is not always reliable (Schulz & Dickschat, 2007). This difficulty in alkane identification was further complicated by a complex mixture of gases produced by NRRL 50072 that resulted in overlapping chromatographic peaks. The incomplete separation resulted in the automated library search algorithm (Agilent Chem Station Version C.0.0) returning different VOC assignments. This led to the incorrect conclusion that some compounds were in the fungal fermentation VOCs but not present in the controls. In addition to the automated library database search comparisons, manual inspection of retention times and fragmentation profiles for each chromatographic peak is necessary to accurately account for the media-derived VOCs. The data reported in the revised tables (below) reflect changes made after these additional aspects of the GC-MS data analyses were considered and these represent the most conservative estimates of the fungal VOC production. The temperature programme used for GC was as follows: 40 °C for 2 min, 10 °C min⁻¹ ramp to 230 °C final temperature and a 5 min hold at 230 °C.

Therefore, as a result of these analytical difficulties, the VOCs in the tables in this Corrigendum primarily differ from those in the original paper by the absence of the branched- and long-chained alkanes. Since many of the VOCs made by this organism can serve as fuels or fuel additives, the term myco-diesel still applies, especially as it relates to the ability of this organism to produce a series of alkyl acetates, alcohols and acids representing some of the major straight-chained alkanes of diesel. Furthermore, the ability of the organism to digest cellulose and subsequently produce VOCs with fuel potential, while qualitatively different in the tables, is still notable. A more detailed and comprehensive study on the VOCs of this organism and a number of its close relatives is in this issue of *Microbiology* (Griffin *et al.*, 2010). The overall conclusion is that the products of this organism following growth on a number of substrates have potential as fuels.

The authors would like to make the following corrections to the paper listed above.

1. Table 1, page 3322–3323

Table 1 is now replaced with a new Table 1, as shown below. Please also note that the relative peak areas presented in this table are corrected values.

2. Table 2, page 3325

Table 2 is now replaced with a new Table 2, as shown below.

3. Table 3, page 3326

Table 3 is now replaced with a new Table 3, as shown below.

Table 1. A GC-MS air space analysis of the volatile compounds produced by NRRL 50072 after an 18 day incubation under microaerophilic conditions at 23 °C on oatmeal agar

Compounds found in the control oatmeal agar bottle are not included in this table. Comparative GC-MS data with standard compounds are indicated in the footnotes under 'Stds'. The total dry weight of the mycelial mat under these conditions was 38.9 mg.

Time	Relative area	Stds	Possible compound	Molecular mass (kDa)
4.598	7.132	*	Ethanol†	46.04
7.232	0.601	*	1-Propanol, 2-methyl-	74.07
7.648	1.807	*	1-Butanol, 3-methyl-, acetate	130.10
8.303	0.335	*	Pentane, 1-iodo-	197.99
8.364	1.379	*	2-Hexanol	102.10
8.735	1.228	*	Hexanoic acid, methyl ester	130.10
9.066	7.956	*	1-Butanol, 3-methyl-	88.09
9.302	0.134		Phenol, 4-ethyl-	122.07
9.817	0.710	*	3-Octanone	128.12
10.054	1.780	*	Acetic acid, hexyl ester	144.12
10.708	0.143	*	2-Heptanol	116.12
10.985	0.574		7-Octen-2-one	126.10
11.329	0.550	*	Acetic acid, sec-octyl ester	172.15
11.545	11.294	*	Acetic acid, heptyl ester	158.13
11.938	0.485		3,5-Octadiene (Z, Z)	110.11
12.127	0.604	*	2-Octanol	130.14
12.878	11.533	*	Acetic acid	60.02
12.931	12.008	*	Acetic acid, octyl ester	172.15
13.584	0.176		Sesquiterpene 1	204.19
14.651	0.651		Unknown	124.13
14.926	0.254		Unknown	122.11
15.673	0.465		Pentanoic acid, 3-methyl-	116.08
17.653	1.657	*	Hexanoic acid	116.08
18.360	1.073	*	Phenylethyl alcohol	122.07
19.588	0.355	*	Phenol, 4-ethyl-2-methoxy-	152.08

*The retention time and MS spectrum closely matched or were identical to an authentic standard compound. Those compounds without a footnote symbol have an MS spectrum that most closely matched the appropriate compound in the NIST database.

†Traces of the substance were also found in the control and the amount of the substance in the fungal flask was many fold greater in relative concentration.

Table 2. A GC-MS air space analysis of the volatile compounds produced by NRRL 50072 after an 18 day incubation under microaerophilic conditions at 23 °C on a cellulose-based medium

Compounds found in the control bottle are not included in this table. Comparative GC-MS data with standard compounds are indicated in the footnotes under 'Stds'. The total dry weight of the mycelial mat under these conditions was 4.7 mg.

Time (min)	Relative area	Stds*	Possible compound	Molecular mass (kDa)
2.608	1.830	*	Octane	114.14
4.562	50.710	*	Ethanol†	46.04
5.248	0.473	*	2-Pentanone	86.07
5.747	397.632	*	Pentanone, 4-methyl-†	100.09
5.820	40.064	*	Unknown	100.05
6.492	1.577	*	3-Hexanone	100.09
6.853	4.860		3-Hexanone, 4-methyl-	114.10
8.333	28.715	*	2-Hexanol	102.10
9.013	47.600	*	1-Butanol, 3-methyl-	88.09
10.437	6.675		3-Heptanone, 5-ethyl-4-methyl-‡	156.15
11.775	0.858	*	2-Nonanone	142.13
12.809	26.776	*	Acetic acid	60.02
13.556	4.539		Sesquiterpene 1	204.19
14.213	7.333		Sesquiterpene 2	204.19
14.598	4.076		Sesquiterpene 3	204.19
14.648	1.223		Sesquiterpene 4	204.19
14.902	24.840	*	Benzonitrile	103.04
14.957	3.169		Sesquiterpene 5	204.19
15.522	3.996		Sesquiterpene 6	204.19
15.961	1.625	*	Sesquiterpene 7	204.19
16.037	1.478		Unknown	136.12
16.104	3.081	*	Benzene, 1,4-dibromo-	233.87
17.281	6.366		Benzene, 1,3,5-trichloro-2-methoxy-	209.94
17.840	0.430		6-Methoxy-1-acetonaphthone	200.08
17.905	0.570	*	Benzenemethanol	108.06
18.596	2.401	*	Benzeneethanol	122.07

*The retention time and MS spectrum closely matched or were identical to an authentic standard compound. Those compounds without a footnote symbol have an MS spectrum that most closely matched the appropriate compound in the NIST database.

†Traces of the substance were also found in the control and the amount of the substance in the fungal flask was many fold greater in relative concentration.

‡Some questions remain as to the identity of this compound.

Table 3. A GC-MS air space analysis of the volatile compounds produced by NRRL 50072 after an 18 day incubation under microaerophilic conditions at 23 °C on host medium

Compounds found in the control bottle are not included in this table. Comparative GC-MS data/notes with standard compounds are indicated in the footnotes under 'Stds'. The total dry weight of the mycelial mat under these conditions was 5.3 mg.

Time (min)	Relative area	Stds*	Possible compound	Molecular mass (kDa)
1.552	14.136	*	1-Butene, 2-methyl-	70.08
2.806	2.304	*	1-Octene	112.12
8.407	2.114	*	1-Butanol, 2-methyl-	88.09
11.591	11.384	*	Benzene, 1-methoxy-2-methyl-	122.07
12.075	1.046	*	Benzene, 1-methoxy-3-methyl-	122.07
12.847	2.816		Unknown	136.12
14.292	4.192		Phenol, 3-ethyl-	122.07
14.770	2.669		Pinocarveol	152.12
14.927	0.900		Sesquiterpene 1	204.19
15.367	0.871		Sesquiterpene 2	204.19
16.324	2.829	*	Myrtenol	152.12
16.691	1.006		Unknown	209.94
20.292	0.817		Unknown	122.07

*The retention time and MS spectrum closely matched or were identical to an authentic standard compound. Those compounds without a designated footnote have an MS spectrum that most closely matched the appropriate compound in the NIST database at a high quality level.

References

Griffin, M. A., Spakowicz, D. J., Gianoulis, T. A. & Strobel, S. A. (2010). Volatile organic compound production by organisms in the genus *Ascochyne* and a re-evaluation of myco-diesel production by NRRL 50072. *Microbiology* **156**, 3814–3829.

Schulz, S. & Dickschat, J. S. (2007). Bacterial volatiles: the smell of small organisms. *Nat Prod Rep* **24**, 814–842.

Strobel, G. A., Dirksie, E., Sears, J. & Markworth, C. (2001). Volatile antimicrobials from *Muscodor albus*, a novel endophytic fungus. *Microbiology* **147**, 2943–2950.