

Supporting Information
for
Generation of the Volatile Spiroketal Conophthorin and Chalcogran by
Fungal Spores on Polyunsaturated Fatty Acids Common to Almonds and
Pistachios

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Table S1. Tentative and verified compounds detected from control experiments with just fatty acids or experiments with individual fungal spores on individual fatty acids. Compounds with no authentication retention time should be considered tentative. Volatile difference between treatments is not delineated.

Volatiles detected	RT (DB-Wax)	Auth. RT
α -Pinene	3.36	
1-Propananol	3.38	3.28
2-Hexanone	3.78	3.76
Hexanal	3.79	3.78
3-Pentanol	3.92	3.92
2-Pentanol	4.04	4.03
2-Butyl furan	4.26	4.24
Butanol	4.32	
1,2-Epoxyheptane	4.44	
1-Penten-3-ol	4.48	4.47
3-Methyl-4-heptanone	4.50	
2-Heptanone	4.86	4.86
Cyclopentanone	4.99	4.99
Limonene	5.16	
2-Hexanol	5.27	5.27
Butyl butyrate	5.32	
Hexyl formate	5.37	5.22
2-Pentyl furan	5.52	5.52
Pentanol	5.75	5.75
1-Acetylcyclohexene	5.80	
3-Octanone	5.90	5.91
Styrene	5.97	
2-Penten-1-ol acetate	6.18	
2-Octanone	6.40	6.40
Conophthorin (CONO)	6.54	6.54
2-Heptanol	6.92	6.93
2-Penten-1-ol, (Z)-	6.94	6.94
2-Heptenal, (E)-	7.12	7.12
6-Octen-2-one	7.22	
4-Ethylcyclohexanone	7.51	
Hexanol	7.58	7.57
Chalcogran, (E)- (CHALC 1)	7.69	7.69
Chalcogran, (Z)- (CHALC 2)	7.77	7.78
3-Hexen-1-ol, (Z)-	8.20	8.20
2-Nonanone	8.33	8.32
3-Octanol	8.36	8.37
Nonanal	8.40	
1-Ethyl-1-methylcyclopentane	8.61	
2-Octanol	8.90	8.89
2-Octenal, (E)-	9.18	9.17
1-Octen-3-ol	9.53	9.52
Heptanol	9.68	9.68
5-Octen-2-ol	9.78	9.82
2,4-Heptadienal, (E,E)-	9.88	
2-Ethylhexanol	10.40	
2-Hepten-1-ol, (E)-	10.88	
Pentyl hexanoate	10.91	10.88
2-Hepten-1-ol, (Z)-	10.98	
6-Undecanone	11.22	11.22
Cyperene	11.35	
2-Butyltetrahydrofuran	11.41	
Cyclohexanol, 2,4-dimethyl-	11.49	
Butyric anhydride	11.60	
Octanol	11.75	11.75
Calarene	12.33	
2-Octen-1-ol, (E)-	12.49	12.49
2-Octen-1-ol, (Z)-	12.52	
5-Octen-1-ol, (Z)-	12.53	12.53
6-Dodecanone	12.68	
Hexanoic anhydride	13.00	
1,3-Cyclooctadiene / 1,3,6-Octatriene	13.23	
3-Nonen-1-ol, (Z)-	13.23	13.23
2,4-Heptadien-1-ol	13.26	
γ -Hexalactone	13.41	13.38
2,4-Decadienal, (E,Z)-	13.92	
Benzeneethanol, α -methyl-	14.39	
Hexanoic acid	14.52	
1-Nonen-4-ol / 1,2-Heptanediol	14.81	
1-Nonen-4-ol / 1,2-Heptanediol	15.27	
Nonalactone	15.80	15.73

Table S2. Two way ANOVA followed by pairwise comparison (Bonferroni t-test) of spore ages. Days compared are dependent upon amount of time between volatile analyses (Permeation time). Compared are days 6, 8, 13 (Permeation = 24 h); and, days 4 and 11 (Permeation = 72 h).

		Linoleic Acid						Linolenic			
Spore	Day Comparison	Conophthorin		Chalcogran 1		Chalcogran 2		Chalcogran 1		Chalcogran 2	
		Sig. Diff.	P =	Sig. Diff.	P =	Sig. Diff.	P =	Sig. Diff.	P =	Sig. Diff.	P =
<i>A. flavus</i> (atoxigenic)	11 to 4	Yes	< 0.001	No	1	No	1	No	1	No	1
	13 to 8	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001
	13 to 6	No	1	Yes	< 0.001	Yes	0.003	Yes	< 0.001	Yes	< 0.001
	8 to 6	Yes	0.001	No	0.148	Yes	0.030	No	1	No	1
<i>A. flavus</i> (toxigenic)	11 to 4	Yes	< 0.001	No	0.169	No	0.060	No	1	No	0.572
	13 to 8	No	1	No	1	No	1	No	1	No	1
	13 to 6	No	1	No	1	No	1	No	1	No	1
	8 to 6	No	1	No	1	No	1	No	1	No	1
<i>A. niger</i>	11 to 4	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001
	13 to 8	Yes	< 0.001	No	0.066	Yes	0.010	No	0.978	No	1
	13 to 6	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001	No	0.127	No	0.068
	8 to 6	No	1	No	1	No	1	No	1	No	1
<i>A. parasiticus</i>	11 to 4	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001	No	0.089	Yes	0.023
	13 to 8	No	0.515	No	1	No	1	No	1	No	1
	13 to 6	Yes	< 0.001	Yes	0.020	No	0.091	No	1	No	1
	8 to 6	Yes	< 0.001	Yes	0.002	Yes	0.008	No	1	No	1
<i>Penicillium glabrum</i>	11 to 4	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001	Yes	0.004	Yes	0.003
	13 to 8	Yes	0.002	Yes	< 0.001	Yes	0.037	No	1.000	No	0.814
	13 to 6	Yes	< 0.001	Yes	< 0.001	Yes	< 0.001	No	0.569	No	0.448
	8 to 6	No	1	No	1	No	1	No	1	No	1
<i>Rhizopus stolonifer</i>	11 to 4	Yes	< 0.001	No	0.666	No	0.164	nd	nd	nd	nd
	13 to 8	No	1	No	1	No	1	nd	nd	nd	nd
	13 to 6	No	1	No	1	No	1	nd	nd	nd	nd
	8 to 6	No	1	No	1	Yes	0.012	nd	nd	nd	nd

Figure S1

