Article

Yeast smell like what they eat: Analysis of Volatile Organic Compounds of *Malassezia furfur* in growth media supplemented with different lipids

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SUPPORTING INFORMATION

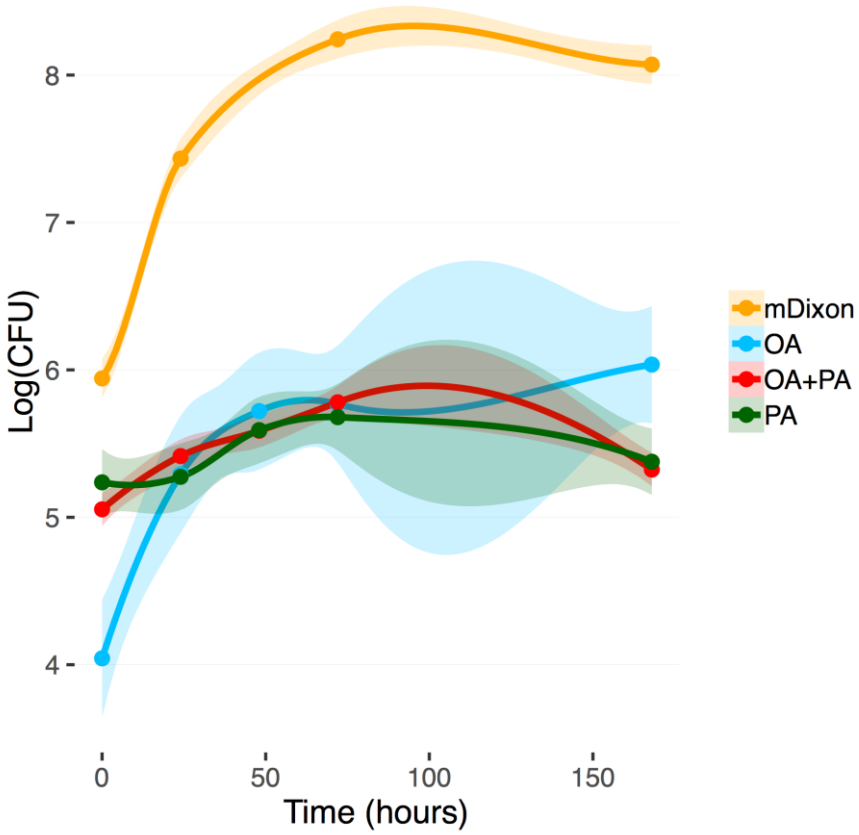

Figure S1. Growth curves of *M. furfur* in mDixon, oleic acid (OA), palmitic acid (PA) and OA+PA medium and their confidence intervals of 99% using a loess method.

3-FigureS2.gif

Figure S2. Animation of rotational distribution of data in the PCA analysis of the volatiles' profiles of *M. furfur* growing in eight different experimental treatments.

Table S1. Significant statistical univariate parameters found on 17 VOCs from *M. furfur* and compounds highlighted by PCA and PLS-DA.

	Statistics from ANOVA		Statistics from Kruskal-Wallis		PCA	PLS-DA
Compound	**F**	**pval**	**K**	**pval**		
Carbon dioxide	16.1	< 0.001	25.8	< 0.001	✓	✓
Octane	36.8	< 0.001	33.8	< 0.001		✓
~~1-~~Hexan-1-ol	92.5	< 0.001	34.6	< 0.001	✓	✓
Nonane	13.5	< 0.001	26.7	< 0.001		
~~2-~~Pentan-2-one	13.1	< 0.001	25.7	< 0.001		
3-methyl ~~-1-~~butan-1-ol	6.9	< 0.001	20.3	0.0049		
~~1-~~Butan-1-ol	7.2	< 0.001	32.8	< 0.001		✓
~~6-~~Hept-6-en-1-ol	106.8	< 0.001	22.4	0.0022		✓
~~*cis*-2-Nonene~~Pentyl acetate	132.1	< 0.001	22.4	0.0022	✓	✓
Isomer5 of methyldecane	56.2	< 0.001	22.0	0.0025	✓	✓
Dimethyl sulfide	29.9	< 0.001	14.3	0.0450	✓	✓
~~5-~~Undec-5-ene	371.0	< 0.001	22.4	0.0022	✓	✓
Isomer2 of methylundecane	94.5	< 0.001	22.0	0.0026	✓	✓
Isomer1 of methyldecane	133.7	< 0.001	22.0	0.0026	✓	✓
~~1,2-Epoxyundecane~~2-Nonyloxirane	51.0	< 0.001	19.0	0.0083		✓
Isomer3 of methyldodecane	4.0	0.0030	15.9	0.0258		
2-methyl-tetrahydrofuran	116.2	< 0.001	22.2	0.0023	✓	✓

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Table S2. Chemical composition of mDixon medium.

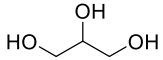
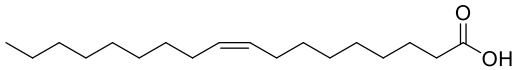
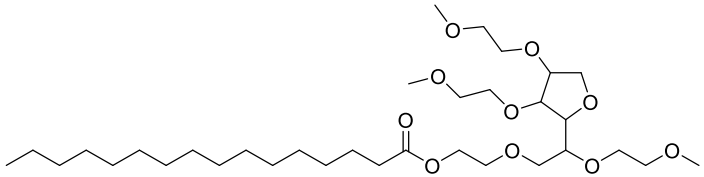
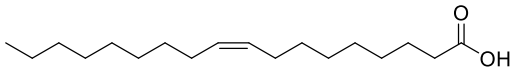
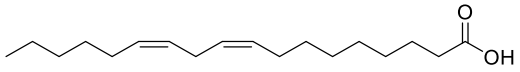
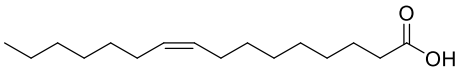
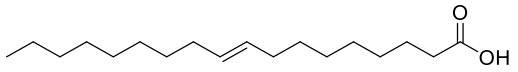
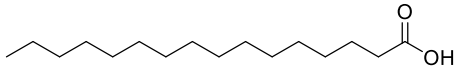
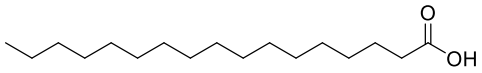
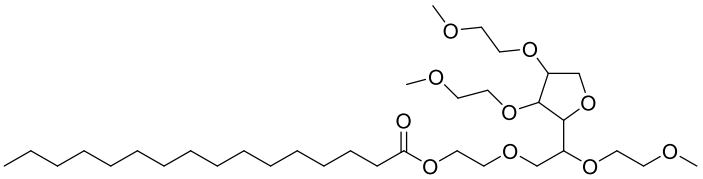
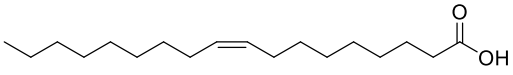
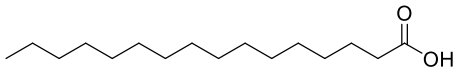
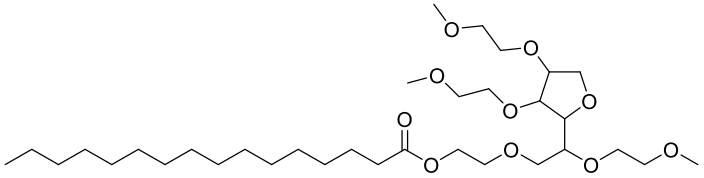
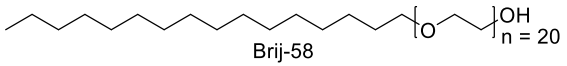
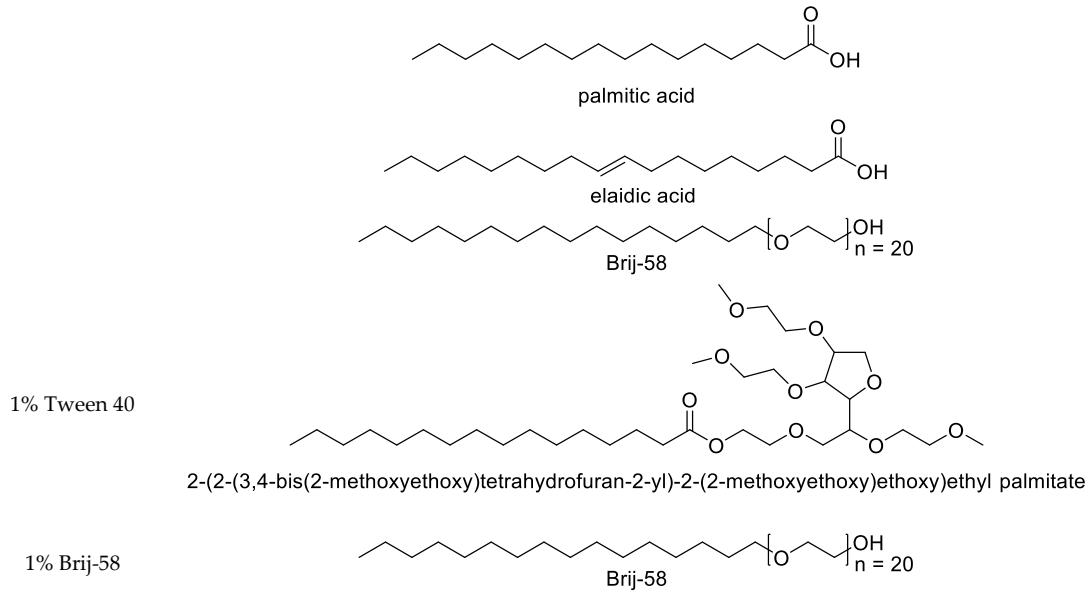
Component	Description or molecular structure	Percentage
malt extract	Bile composition (water 92 g/dL, bile salts 6 g/dL, bilirubin 0.3 g/dL, cholesterol 0.3 to 0.9 g/dL, FA 0.3 to 1.2 g/dL, lecithin 0.3 g/dL and 200 meq/L inorganic salts [1]	3.6
desiccated oxbile	Lecithins: phospholipids, glycolipids or triglyceride. Glycerophospholipids as phosphatidylcholine, phosphatidylethanolamine, phosphatidylinositol, phosphatidylserine, and phosphatidic acid [2]	2.0
peptone	Natural sources of amino-acids, peptides and proteins	0.6
glycerol	 glycerol	0.2
oleic acid	 oleic acid	0.2
Tween 40	 2-(2-(3,4-bis(2-methoxyethoxy)tetrahydrofuran-2-yl)-2-(2-methoxyethoxy)ethoxy)ethyl palmitate	1

Table S3. Chemical composition of oleic acid (OA), palmitic acid (PA) and OA+PA media. The components of the minimal medium (MM) are listed in Materials and Methods.

Medium	Components	Components found in the GC-FID analysis[3] or molecular structure	Percentage
OA	1% of Oleic acid	 oleic acid	78%
		 linoleic acid	10%
		 palmitoleic acid	3%
		 elaidic acid	2%
		 palmitic acid	6%
		 heptadecanoic acid	1%

	1% Tween 40	 2-(2-(3,4-bis(2-methoxyethoxy)tetrahydrofuran-2-yl)-2-(2-methoxyethoxy)ethoxy)ethyl palmitate
	MM	
OA+PA	1% of a mixture 50:50 of Oleic acid and Palmitic acid	 oleic acid  palmitic acid
	1% Tween 40	 2-(2-(3,4-bis(2-methoxyethoxy)tetrahydrofuran-2-yl)-2-(2-methoxyethoxy)ethoxy)ethyl palmitate
	1% Brij-58	 Brij-58
	MM	
PA	1% of Palmitic acid	



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3. Triana, S.; de Cock, H.; Ohm, R.A.; Danies, G.; Wösten, H.A.B.; Restrepo, S.; González Barrios, A.F.; Celis, A. Lipid metabolic versatility in Malassezia spp. yeasts studied through metabolic modeling. *Front. Microbiol.* **2017**, *8*, 1–18, doi:10.3389/fmicb.2017.01772.