Supporting information

Rhamnolipids: Highly Compatible Surfactants for the Enzymatic Hydrolysis of Waste Frying Oils in Microemulsion Systems

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Table S1. Relative abundance of the different rhamnolipid isomers found in the commercial mixture from Sigma.

Retention time (min)	*m/z* $[M-H]^-$	Rhamnolipid isomer	Relative abundance (%)
0.72	621	diR-C_8-C_{10}	1.9
0.87	475	monoR- C_8-C_{10}	5.3
1.24	649	diR- C_{10}-C_{10}	25.4
1.58	503	monoR- C_{10}-C_{10}	52.9
2.07	529	monoR- C_{10}-$C_{12:1}$	7.3
2.07	677	diR- C_{10}-$C_{12:1}$	5.4

Table S2. Desorption capacity (DC) of RHL and AOT over PFL and TLL hydrolyzing tributyrin in O/W emulsions and activity of both enzymes (in lipase units per gram, UL/g) hydrolyzing tributyrin O/W emulsions prepared with RHL, AOT and gum arabic (as control).

	DC (%)		Activity (UL/g)		
	RHL	AOT	RHL	AOT	Gum arabic
PFL	-2.2 ± 1.4	-5.3 ± 0.3	16028 ± 950	13709 ± 901	13846 ± 1079
TLL	-19.2 ± 1.2	-11.2 ± 1.7	25821 ± 1883	34344 ± 7636	77877 ± 10906

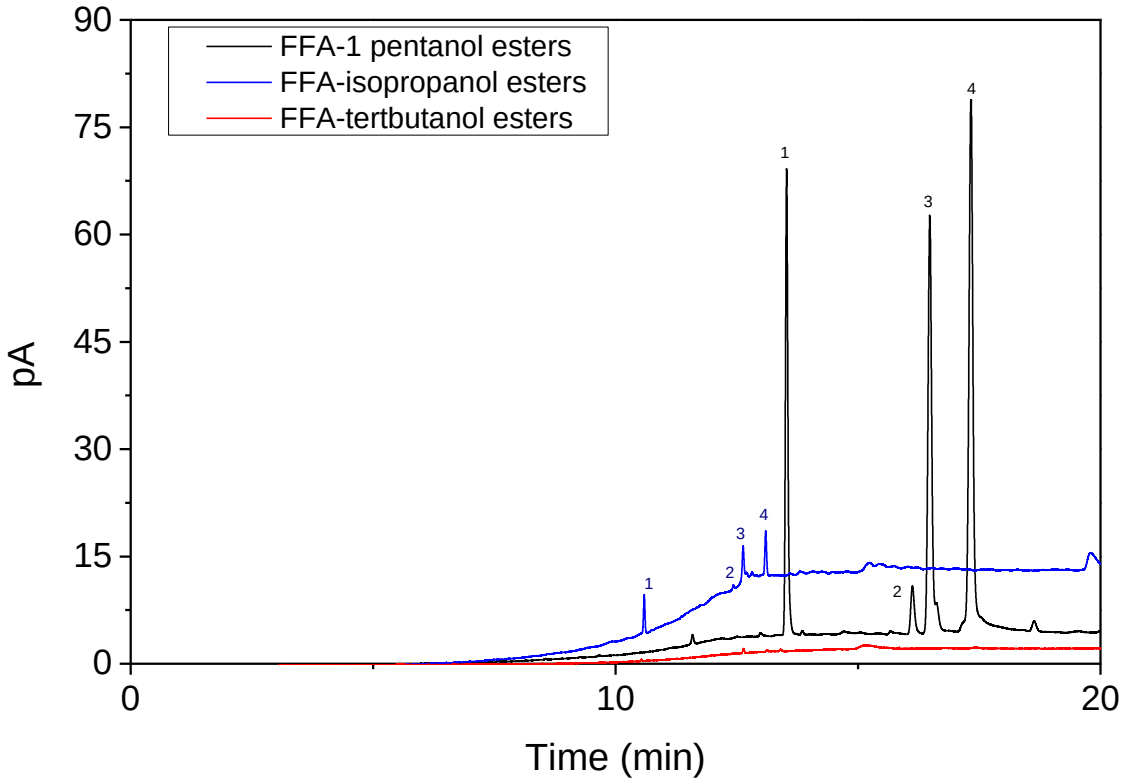

Figure S1. FFA-alcohol esters detected after WFO hydrolysis using 1-pentanol, isopropanol or tert-butanol as cosolvent in the continuous phase. Numbered peaks correspond to esters of the four main fatty acids present on the WFO: (1) palmitic, (2) stearic, (3) oleic and (4) linolenic.

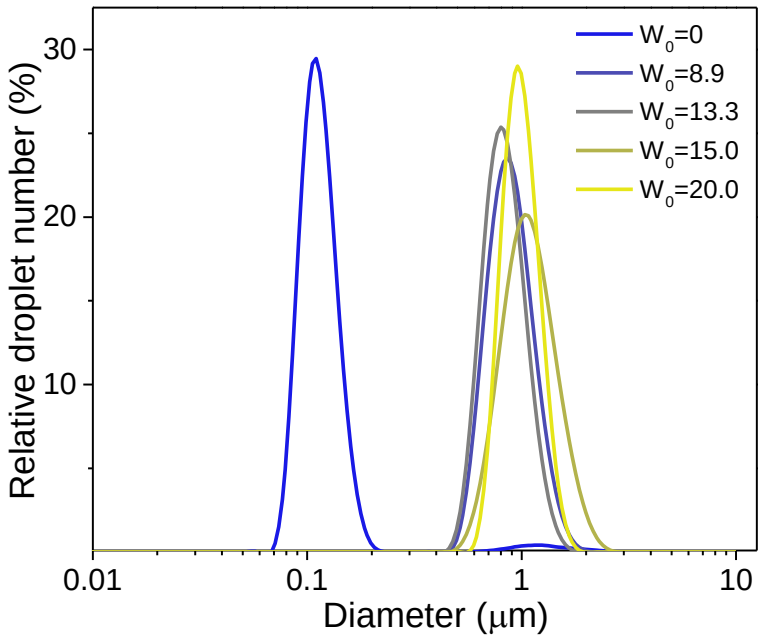

Figure S2. Influence of water/surfactant molar ratio (W_0) on the droplet diameter distributions of water-in-oil microemulsions prepared with rhamnolipids as emulsifier at a concentration of 50 mM, IO/TB=75/25 and Φ=0.2.

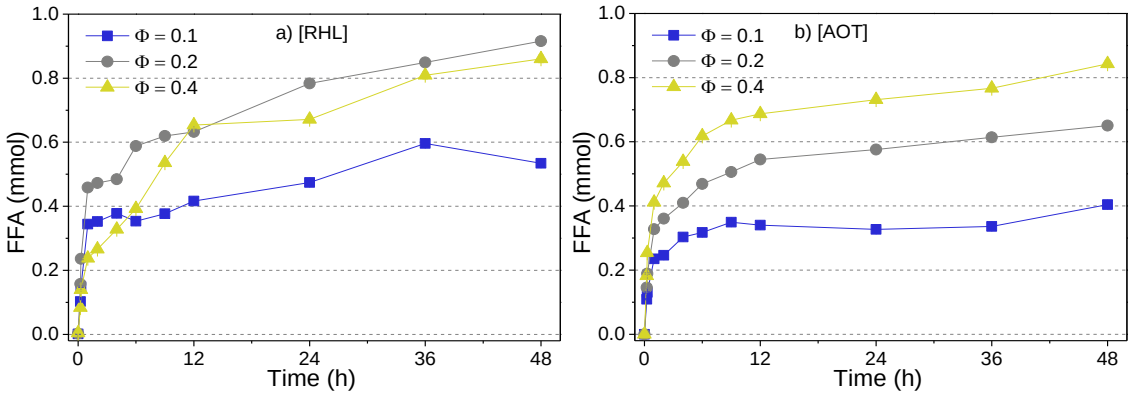

Figure S3. Free fatty acids released during WFO hydrolysis with PFL lipase, at W_0=15, IO/TB=75/25 and at different WFO volume fraction (Φ=0.1, 0.2 and 0.4) in microemulsions prepared with RHL (left) and AOT (right) as emulsifier. Hydrolysis were carried out during 48 h at 37 °C under stirring at 120 rpm. Either, AOT and RHL concentration was 50 mM in the organic phase. Lipase concentration was 0.2 g L^{-1} referred to the bulk phase.