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SUPPLEMENTARY MATERIAL TO

Efficiency of different additives in the improvement of the oxidation stability of fatty acid methyl esters with different properties

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TABLE S-I. Properties of methyl esters obtained in this study from the soybean and sunflower oils blend (SoSuME and SoSuME-EN) and waste cooking oil (WCOME) in comparison with the properties required by the EN14214 standard

Property	EN 14214	SoSuME	WCOME	SoSuME-EN	Analytical method
Fatty acid methyl ester content, wt. %	min 96.5	86.75	99.75	98.02	GC/FID, EN14103
Linolenic acid methyl ester content, wt. %	max 12	3.28	0.08	3.24	
Polyunsaturated methyl esters (≥4 double bonds) content, wt. %	max 1	<0.02	<0.02	0.19	
Methanol content, wt. %	max 0.2	0.08	0.07	0.08	GC/FID/HSS, EN14110
Na+K, mg kg^{-1}	max 5	31.66	12.54	4.50	ICP/MS, VM/MET 883
Ca+Mg, mg kg^{-1}	max 5	57.47	7.49	2.91	
Water content, mg kg^{-1}	max 500	1029	764	449	Karl Fisher, ISO 12937
Oxidation stability at 110 °C, h	min 8	0.60	0.63	8.88	Rancimat, EN 14112
Cold filter plugging point, °C	Guidance	-13	-12	-12	ASTM D 6371
Acid number, mg KOH g^{-1}	max 0.5	0.39	0.80	0.23	Volumetric, EN 14104
Iodine number, g I_2 / 100 g	120	126	120	115	Volumetric, EN 14111
Phosphorous, mg kg^{-1}	max 4.00	23.03	1.52	2.13	Spectrophotometry, VM/ MET 659
Density at 15 °C, kg m^{-3}	860-900	885	887	885	Areometry, EN ISO 3675

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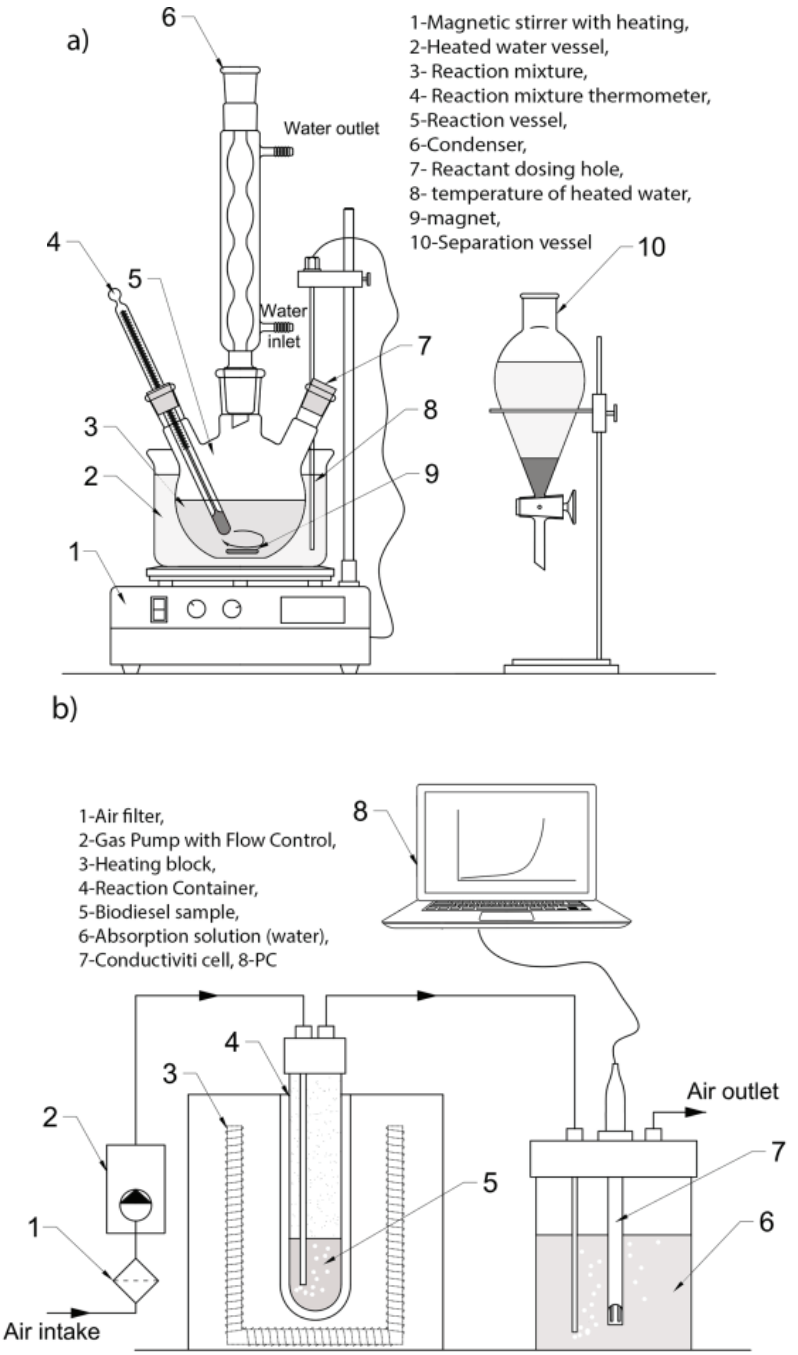

Fig. S-1. Schematic representation of the experimental setup for: (a) production of MEs by transesterification and separation from glycerol, and (b) induction period measurement.

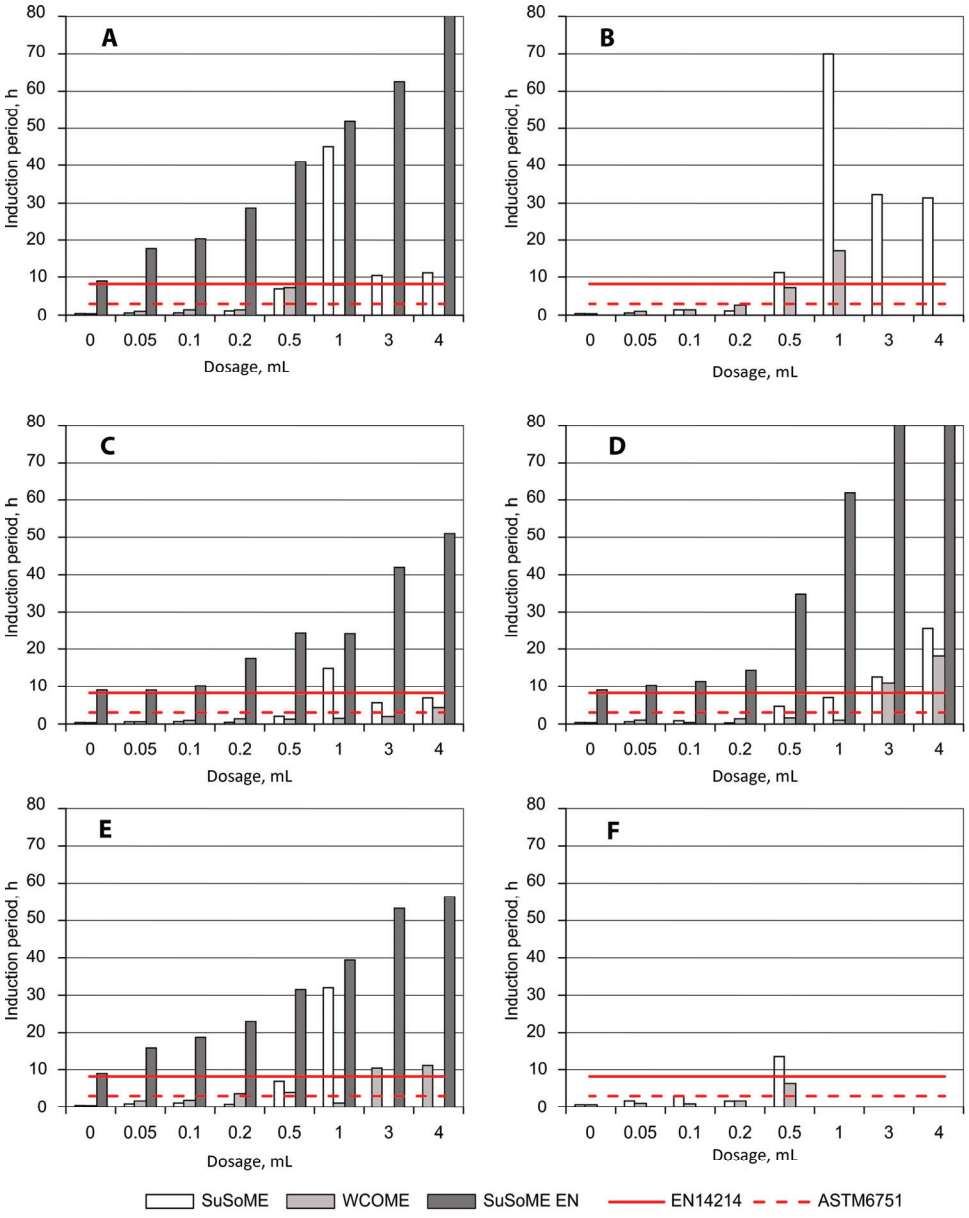

Fig. S-2. Effects of various dosages of antioxidant formulations (marked A-F, Tables III and IV) on the oxidation stability (expressed as induction period) of SoSuME, WCOME and SoSuME-EN.

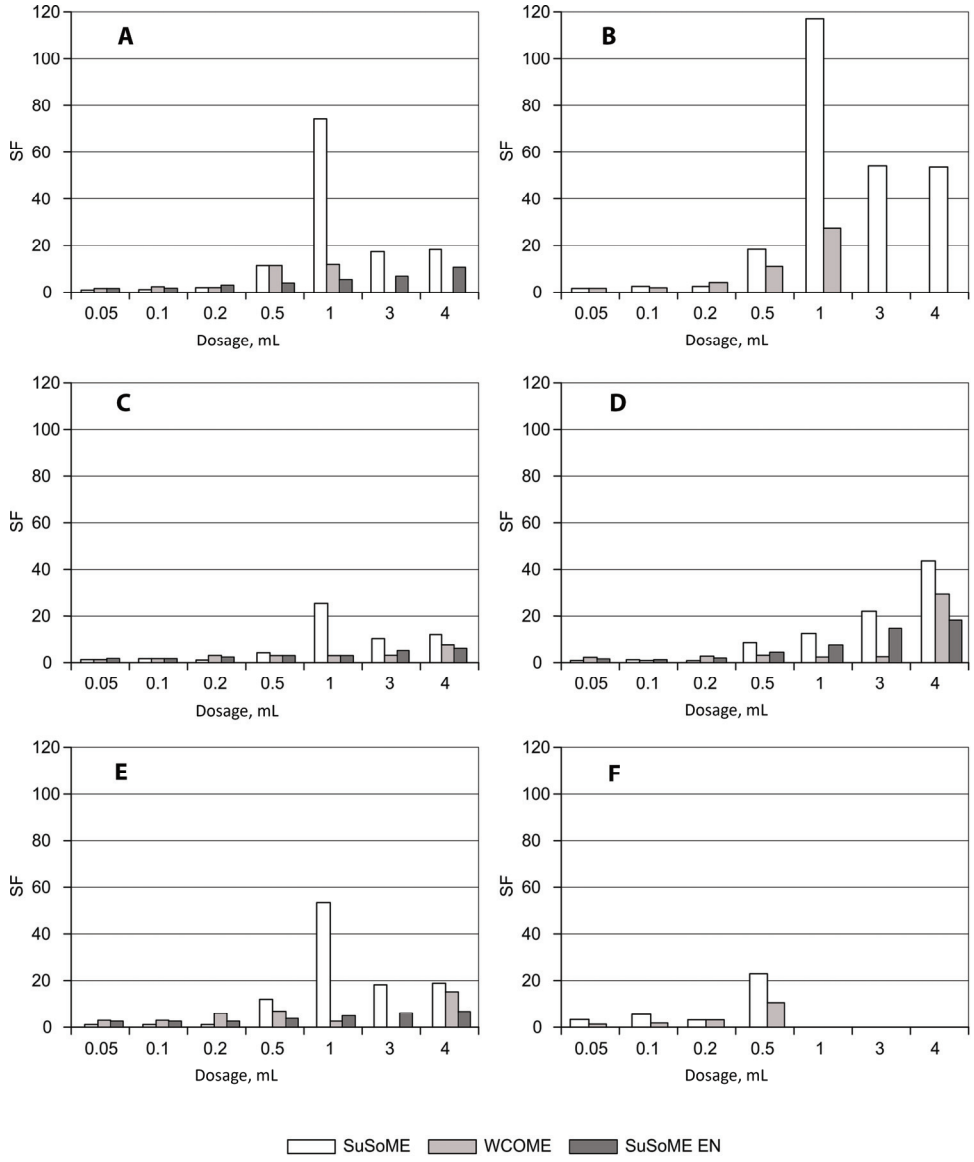

Fig. S-3. Stabilization factors, *SF*, calculated for each tested formulation (A-F, Table III) added in different dosages to SoSuME, WCOME and SoSuME-EN.