

SUPPLEMENTARY INFORMATION

Direct biodiesel production from waste wet spent coffee ground

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Table 1. ANOVA and Friedman ANOVA tests and Cochran-Bartlett and Tukey post hoc tests for C_{18:2} and C_{18:1} of RES-derived FAME samples of waste wet SCG. Significance Values below $\alpha < 0.05$ are colour coded in red.

Effect	Univariate Tests of Significance for C18:2 (Spreadsheet1) Sigma-restricted parameterization Effective hypothesis decomposition				
	SS	Degr. of	MS	F	p
Intercept	34411.23	1	34411.23	462.8483	0.000000
Ratio	934.52	4	233.63	3.1424	0.022126
Time	324.32	4	81.08	1.0906	0.371378
Ratio*Time	1158.85	16	72.43	0.9742	0.497425
Error	3717.33	50	74.35		

Effect	Univariate Tests of Significance for C18:2 (Spreadsheet9) Sigma-restricted parameterization Effective hypothesis decomposition				
	SS	Degr. of	MS	F	p
Intercept	3960.100	1	3960.100	394.0398	0.000006
Cat Conc	84.150	4	21.038	2.0933	0.219270
Error	50.250	5	10.050		

Effect	Univariate Tests of Significance for C18:2 (Spreadsheet25) Sigma-restricted parameterization Effective hypothesis decomposition				
	SS	Degr. of	MS	F	p
Intercept	4708.900	1	4708.900	1192.127	0.000000
Time	0.350	4	0.087	0.022	0.998696
Error	19.750	5	3.950		

Effect	Univariate Tests of Significance for C18:1 (Spreadsheet1) Sigma-restricted parameterization Effective hypothesis decomposition				
	SS	Degr. of	MS	F	p
Intercept	112762.5	1	112762.5	448.3767	0.000000
Ratio	5051.7	4	1262.9	5.0217	0.001759
Time	594.5	4	148.6	0.5910	0.670719
Ratio*Time	2782.0	16	173.9	0.6914	0.788535
Error	12574.5	50	251.5		

Effect	Univariate Tests of Significance for C18:1 (Spreadsheet9) Sigma-restricted parameterization Effective hypothesis decomposition				
	SS	Degr. of	MS	F	p
Intercept	16180.51	1	16180.51	125.4485	0.000099
Cat Conc	907.40	4	226.85	1.7588	0.273827
Error	644.91	5	128.98		

Effect	Univariate Tests of Significance for C18:1 (Spreadsheet25) Sigma-restricted parameterization Effective hypothesis decomposition				
	SS	Degr. of	MS	F	p
Intercept	8136.756	1	8136.756	1380.574	0.000000
Time	5.087	4	1.272	0.216	0.918740
Error	29.469	5	5.894		

Tests of Homogeneity of Variances (Spreadsheet1)					
Effect: Ratio*Time					
	Hartley	Cochran	Bartlett	df	p
C18:2		0.489643	111.9733	20	0.000000

Tests of Homogeneity of Variances (Spreadsheet9)					
Effect: "Catayst Concentration"					
	Hartley	Cochran	Bartlett	df	p
C18:2		0.898010	4.721905	3	0.193331

Tests of Homogeneity of Variances (Spreadsheet25)					
Effect: Time					
	Hartley	Cochran	Bartlett	df	p
C18:2	1.440000	0.227848	0.055341	4	0.999624

Tests of Homogeneity of Variances (Spreadsheet1)					
Effect: Ratio*Time					
	Hartley	Cochran	Bartlett	df	p
C18:1	32467.00	0.322746	157.3177	24	0.00

Tests of Homogeneity of Variances (Spreadsheet9)					
Effect: "Catayst Concentration"					
	Hartley	Cochran	Bartlett	df	p
C18:1	16641.00	0.806367	14.57303	4	0.005674

Tests of Homogeneity of Variances (Spreadsheet25)					
Effect: Time					
	Hartley	Cochran	Bartlett	df	p
C18:1	361.0000	0.382821	3.387726	4	0.495154

Tukey HSD test; variable C18:2 (Spreadsheet9)						
Approximate Probabilities for Post Hoc Tests						
Error: Between MS = 10.050, df = 5.0000						
Cell No.	Cat Conc	{1}	{2}	{3}	{4}	{5}
1	1		0.455479	0.361480	0.999076	1.000000
2	3	0.455479		0.999076	0.564673	0.455479
3	5	0.361480	0.999076		0.455479	0.361480
4	7	0.999076	0.564673	0.455479		0.999076
5	9	1.000000	0.455479	0.361480	0.999076	

Tukey HSD test; variable C18:2 (Spreadsheet25)						
Approximate Probabilities for Post Hoc Tests						
Error: Between MS = 3.9500, df = 5.0000						
Cell No.	Time	{1}	{2}	{3}	{4}	{5}
1	30		0.999924	0.999924	1.000000	0.999924
2	45	0.999924		1.000000	0.999924	0.998825
3	60	0.999924	1.000000		0.999924	0.998825
4	75	1.000000	0.999924	0.999924		0.999924
5	90	0.999924	0.998825	0.998825	0.999924	

Tukey HSD test; variable C18:1 (Spreadsheet9)						
Approximate Probabilities for Post Hoc Tests						
Error: Between MS = 128.98, df = 5.0000						
Cell No.	Cat Conc	{1}	{2}	{3}	{4}	{5}
1	1		0.459252	0.346948	0.998580	0.966117
2	3	0.459252		0.998043	0.582448	0.759000
3	5	0.346948	0.998043		0.449774	0.615278
4	7	0.998580	0.582448	0.449774		0.995626
5	9	0.966117	0.759000	0.615278	0.995626	

Tukey HSD test; variable C18:1 (Spreadsheet25)						
Approximate Probabilities for Post Hoc Tests						
Error: Between MS = 5.8937, df = 5.0000						
Cell No.	Time	{1}	{2}	{3}	{4}	{5}
1	30		0.999827	0.912482	0.999827	0.999966
2	45	0.999827		0.955160	1.000000	0.999998
3	60	0.912482	0.955160		0.955160	0.942716
4	75	0.999827	1.000000	0.955160		0.999998
5	90	0.999966	0.999998	0.942716	0.999998	