

Appendices

APPENDIX A**Standard curves of total phenolic and flavonoid content**

Fig. A.1. Standard curve of TPC

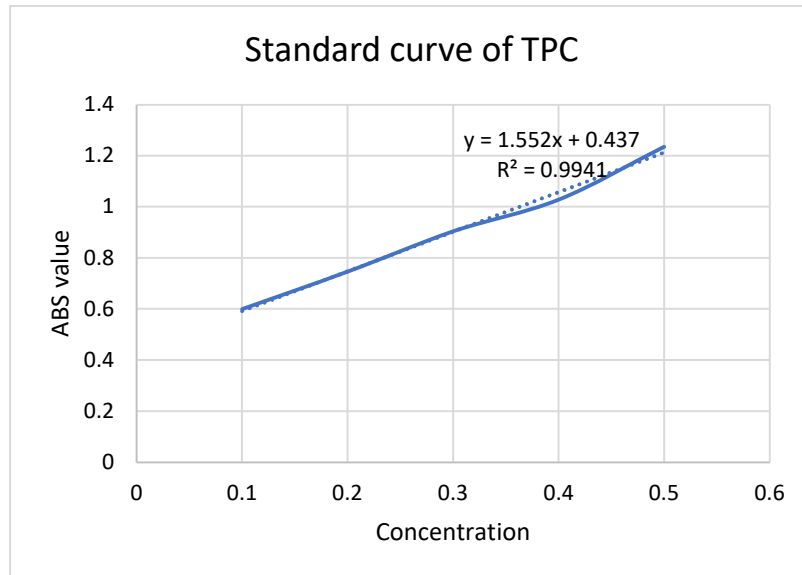
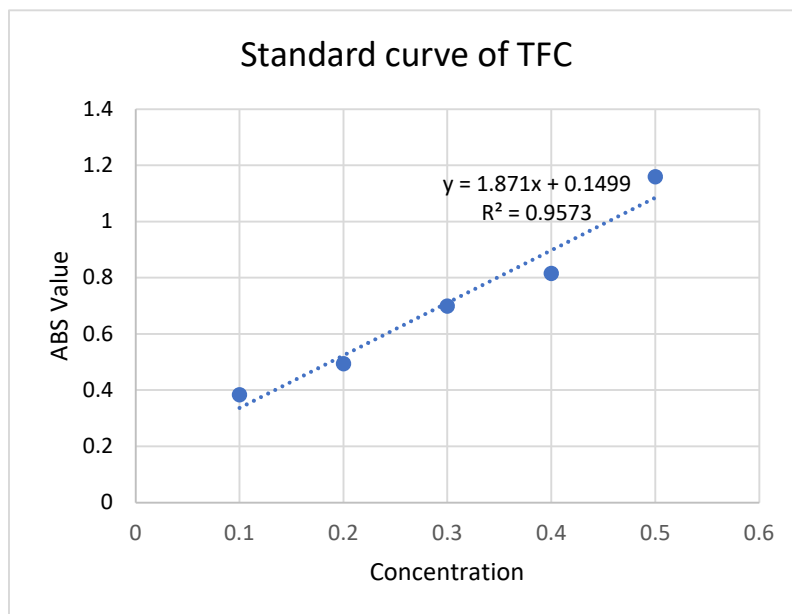


Fig. A.2 Standard curve of TFC



APPENDIX B

ANOVA Tables for various response variables

Table B.1 ANOVA table for the essential oil yield

Source	Sum of Squares	df	MeanSquare	F-value	p-value	
Model	0.0438	9	0.0049	13.20	0.0013	significant
A-solid to water ratio	0.0013	1	0.0013	3.39	0.1081	
B-exposure time	0.0162	1	0.0162	43.95	0.0003	
C-power	0.0084	1	0.0084	22.93	0.0020	
AB	0.0009	1	0.0009	2.44	0.1621	
AC	0.0009	1	0.0009	2.44	0.1621	
BC	0.0001	1	0.0001	0.2713	0.6185	
A²	0.0042	1	0.0042	11.34	0.0120	
B²	0.0023	1	0.0023	6.31	0.0403	
C²	0.0099	1	0.0099	26.87	0.0013	
Residual	0.0026	7	0.0004			
Lack of Fit	0.0021	3	0.0007	5.83	0.0607	not significant
Pure Error	0.0005	4	0.0001			
Cor Total	0.0464	16				

Fit Statistics

Std. Dev.	0.0192		R²	0.9443
Mean	0.3729		Adjusted R²	0.8728
C.V. %	5.15		Predicted R²	0.2589
			Adeq Precision	14.2621

Table B.2 ANOVA table for the specific gravity

Source	Sum of Squares	df	Mean Square	F-value	p-value
Model	0.0006	9	0.0001	35.54	< 0.0001 significant
A-solid to water ratio	0.0002	1	0.0002	118.73	< 0.0001
B-exposure time	0.0001	1	0.0001	32.58	0.0007
C-power	0.0001	1	0.0001	26.92	0.0013
AB	0.0000	1	0.0000	8.62	0.0219
AC	9.000E-06	1	9.000E-06	4.85	0.0636
BC	0.0000	1	0.0000	26.38	0.0013
A²	0.0001	1	0.0001	68.58	< 0.0001
B²	0.0001	1	0.0001	27.77	0.0012
C²	0.0000	1	0.0000	0.0000	1.0000
Residual	0.0000	7	1.857E-06		
Lack of Fit	0.0000	3	4.333E-06		
Pure Error	0.0000	4	0.0000		
Cor Total	0.0006	16			

Fit Statistics

Std. Dev.	0.0014	R²	0.9786
Mean	0.9138	Adjusted R²	0.9511
C.V. %	0.1491	Predicted R²	0.6574
		Adeq Precision	15.3081

Table B.3 ANOVA table for energy consumption

Source	Sum of Squares	df	Mean Square	F-value	p-value	
Model	1.81	9	0.2013	24.51	0.0002	significant
A-solid to water ratio	0.0013	1	0.0013	0.1522	0.7081	
B-exposure time	0.8450	1	0.8450	102.87	< 0.0001	
C-power	0.9113	1	0.9113	110.93	< 0.0001	
AB	0.0100	1	0.0100	1.22	0.3064	
AC	0.0025	1	0.0025	0.3043	0.5983	
BC	0.0400	1	0.0400	4.87	0.0631	
A²	0.0007	1	0.0007	0.0801	0.7854	
B²	0.0007	1	0.0007	0.0801	0.7854	
C²	0.0007	1	0.0007	0.0801	0.7854	
Residual	0.0575	7	0.0082			
Lack of Fit	0.0175	3	0.0058	0.5833	0.6569	not significant
Pure Error	0.0400	4	0.0100			
Cor Total	1.87	16				

Fit Statistics

Std. Dev.	0.0906		R²	0.9692
Mean	0.9941		Adjusted R²	0.9297
C.V. %	9.12		Predicted R²	0.8168
			Adeq Precision	19.0614

Table B.4 ANOVA table for the oleoresin yield

Source	Sum of Squares	df	Mean Square	F value	p-value
Model	52.01	8	6.50	107.43	< 0.0001 significant
A-solid to solvent ratio	0.0091	1	0.0091	0.1504	0.7030
B-sonication time	2.13	1	2.13	35.14	< 0.0001
C-solvents	48.38	1	48.38	799.32	< 0.0001
AB	0.0007	1	0.0007	0.0116	0.9154
AC	0.0019	1	0.0019	0.0309	0.8625
BC	0.7023	1	0.7023	11.60	0.0034
A²	0.4345	1	0.4345	7.18	0.0158
B²	0.4658	1	0.4658	7.70	0.0130
Residual	1.03	17	0.0605		
Lack of Fit	1.03	9	0.1143		
Pure Error	0.0000	8	0.0000		
Cor Total	53.04	25			

Fit Statistics

Std. Dev.	0.2460	R²	0.9806
Mean	3.58	Adjusted R²	0.9715
C.V. %	6.87	Predicted R²	0.9443
		Adeq Precision	25.9726

Table B.5 ANOVA table for total phenolic content

Source	Sum of Squares	df	Mean Square	F-value	p-value	
Model	484.47	8	60.56	478.25	< 0.0001	significant
A-solid to solvent ratio	6.44	1	6.44	50.85	< 0.0001	
B sonication time	207.14	1	207.14	1635.87	< 0.0001	
C-solvents	261.27	1	261.27	2063.35	< 0.0001	
AB	0.5304	1	0.5304	4.19	0.0565	
AC	0.1057	1	0.1057	0.8347	0.3737	
BC	4.48	1	4.48	35.35	< 0.0001	
A²	0.0111	1	0.0111	0.0873	0.7712	
B²	4.47	1	4.47	35.32	< 0.0001	
Residual	2.15	17	0.1266			
Lack of Fit	1.70	9	0.1893	3.38	0.0505	not significant
Pure Error	0.4486	8	0.0561			
Cor Total	486.62	25				

Fit Statistics

Std. Dev.	0.3558	R²	0.9956
Mean	59.21	Adjusted R²	0.9935
C.V. %	0.6010	Predicted R²	0.9894
		Adeq Precision	78.8926

Table B.6 ANOVA table for total flavonoid content

Source	Sum of Squares	df	Mean Square	F-value	p-value	
Model	5.15	8	0.6436	132.92	< 0.0001	significant
A-solid to solvent ratio	0.0266	1	0.0266	5.50	0.0314	
Bsonication time	3.07	1	3.07	633.41	< 0.0001	
C-solvents	1.10	1	1.10	226.33	< 0.0001	
AB	0.0053	1	0.0053	1.08	0.3122	
AC	0.0045	1	0.0045	0.9323	0.3478	
BC	0.6394	1	0.6394	132.05	< 0.0001	
A²	0.0859	1	0.0859	17.74	0.0006	
B²	0.2576	1	0.2576	53.20	< 0.0001	
Residual	0.0823	17	0.0048			
Lack of Fit	0.0642	9	0.0071	3.16	0.0600	not significant
Pure Error	0.0181	8	0.0023			
Cor Total	5.23	25				

Fit Statistics

Std. Dev.	0.0696	R²	0.9843
Mean	3.42	Adjusted R²	0.9769
C.V. %	2.03	Predicted R²	0.9566
		Adeq Precision	44.0587