

APPENDIX

The following tables represent the ANOVA and effect estimates for the two dependent variables: % recovery and % survival

ITEMP= INLET TEMPERATURE (°C)

SOLID TO MALTODEXTRIN RATIO= JUICE SOLID CONTENT: MALTODEXTRIN RATIO

FEED RATE= FEED RATE (mL/min)

a) For Litchi juice

	Inlet Temp (°C)	Maltodextrin Ratio	Inlet Feed Rate (mL/min)	Inlet Temp (°C)	Maltodextrin Ratio	Inlet Feed Rate (mL/min)	% Recovery	% Survival
1	-1	-1	0	100	1	50	29.8501	81.6964
2	1	-1	0	130	1	50	45.7216	56.9637
3	-1	1	0	100	2	50	34.4611	76.6103
4	1	1	0	130	2	50	46.11	51.9745
5	-1	0	-1	100	1.5	40	24.8508	81.6964
6	1	0	-1	130	1.5	40	36.8879	51.9745
7	-1	0	1	100	1.5	60	31.1606	77.7535
8	1	0	1	130	1.5	60	53.3904	65.9054
9	0	-1	-1	115	1	40	34.1699	66.1089
10	0	1	-1	115	2	40	34.9464	62.3694
11	0	-1	1	115	1	60	34.1699	76.6103
12	0	1	1	115	2	60	35.723	76.5038
13	0	0	0	115	1.5	50	31.9372	68.1917
14	0	0	0	115	1.5	50	30.1898	69.2283
15	0	0	0	115	1.5	50	31.5489	67.5620
16	0	0	0	115	1.5	50	27.1806	65.5857
17	0	0	0	115	1.5	50	26.7923	65.5857

ANOVA-1 (Recovery)

Source	Sum of Squares	DF	Mean Square	F Value	Prob > F	
Model	806.9065	9	89.656	6.927	0.0092	significant
A	477.2098	1	477.210	36.872	0.0005	
B	6.714567	1	6.715	0.519	0.4947	
C	69.55422	1	69.554	5.374	0.0535	
A2	135.0315	1	135.031	10.433	0.0145	
B2	62.18084	1	62.181	4.804	0.0645	

C2	8.014373	1	8.014	0.619	0.4571	
AB	4.457554	1	4.458	0.344	0.5757	
AC	25.97285	1	25.973	2.007	0.1995	
BC	0.150772	1	0.151	0.012	0.9171	
Residual	90.5973	7	12.94247			
Lack of Fit	67.27662	3	22.42554	3.846466	0.1130	not significant
Pure Error	23.32067	4	5.830168			
Cor Total	897.5038	16				

Std. Dev.	3.597565		R-Squared	0.899056
Mean	34.65237		Adj R-Squared	0.769272
C.V.	10.38187		Pred R-Squared	-0.23996
PRESS	1112.865		Adeq Precision	7.735578

Recovery =
29.52974
7.72342 * A
0.916145 * B
2.948606 * C
5.663036 * A2
3.842909 * B2
1.379643 * C2
-1.05565 * A * B
2.548178 * A * C
0.194147 * B * C

AVOVA-1 (Survival)

Source	Sum of Squares	DF	Mean Square	F Value	Prob > F	
Model	1327.338	9	147.482	20.76878	0.0003	significant
A	1033.725	1	1033.725	145.572	< 0.0001	
B	24.22506	1	24.225	3.411	0.1072	
C	149.8513	1	149.851	21.102	0.0025	
A2	2.321678	1	2.322	0.327	0.5853	
B2	0.439511	1	0.440	0.062	0.8107	
C2	34.06355	1	34.064	4.797	0.0647	
AB	0.002346	1	0.002	0.000	0.9860	
AC	79.86824	1	79.868	11.247	0.0122	
BC	3.299468	1	3.299	0.465	0.5174	
Residual	49.708	7	7.101143			
Lack of Fit	39.27238	3	13.09079	5.017738	0.0766	not significant
Pure Error	10.43561	4	2.608904			
Cor Total	1377.046	16				

Std. Dev.	2.664797		R-Squared	0.963902
Mean	68.3718		Adj R-Squared	0.917491
C.V.	3.897509		Pred R-Squared	0.53185
PRESS	644.6638		Adeq Precision	15.49634

Survivality =
67.2307
-11.3673 * A
-1.74015 * B
4.32798 * C
-0.74256 * A2
0.323085 * B2
2.844309 * C2
0.024219 * A * B
4.468452 * A * C
0.908222 * B * C

b) For pineapple juice

	Inlet Temp (°C)	Maltodextrin Ratio	Inlet Feed Rate (mL/min)	Inlet Temp (°C)	Maltodextrin Ratio	Inlet Feed Rate (mL/min)	% Recovery	% Survival
1	-1	-1	0	100	1	50	25.4	84.33
2	1	-1	0	130	1	50	36.8	58.8
3	-1	1	0	100	2	50	30.75	82.62
4	1	1	0	130	2	50	36.3	68.03
5	-1	0	-1	100	1.5	40	32.1	84.33
6	1	0	-1	130	1.5	40	38.8	56.87
7	-1	0	1	100	1.5	60	25.6	80.26
8	1	0	1	130	1.5	60	47.1	53.65
9	0	-1	-1	115	1	40	32.5	68.24
10	0	1	-1	115	2	40	35.5	69.1
11	0	-1	1	115	1	60	31.1	70.39
12	0	1	1	115	2	60	41.5	64.38
13	0	0	0	115	1.5	50	35.2	71.14
14	0	0	0	115	1.5	50	35.2	67.7
15	0	0	0	115	1.5	50	36.3	69.74
16	0	0	0	115	1.5	50	32.9	67.7
17	0	0	0	115	1.5	50	27.6	71.46

AVOVA-1 (Recovery)

Source	Sum of Squares	DF	Mean Square	F Value	Prob > F	
Model	410.8493	9	45.64992	4.277191	0.0342	significant
A	254.8153	1	254.815	23.875	0.0018	
B	41.63281	1	41.633	3.901	0.0888	
C	5.12	1	5.120	0.480	0.5109	
A2	0.150007	1	0.150	0.014	0.9090	
B2	3.710533	1	3.711	0.348	0.5740	
C2	29.54053	1	29.541	2.768	0.1401	
AB	8.555625	1	8.556	0.802	0.4003	
AC	54.76	1	54.760	5.131	0.0579	
BC	13.69	1	13.690	1.283	0.2947	
Residual	74.71013	7	10.67288			
Lack of Fit	25.93813	3	8.646042	0.709099	0.5951	not significant
Pure Error	48.772	4	12.193			
Cor Total	485.5594	16				

Std. Dev.	3.266937		R-Squared	0.846136
Mean	34.15588		Adj R-Squared	0.648311
C.V.	9.564785		Pred R-Squared	-0.01165
PRESS	491.2163		Adeq Precision	9.226736

Recovery =

33.44

5.64375 * A

2.28125 * B

0.8 * C

-0.18875 * A2

-0.93875 * B2

2.64875 * C2

-1.4625 * A * B

3.7 * A * C

1.85 * B * C

AVOVA-1 (Survival)

Source	Squares	DF	Square	Value	Prob > F	
Model	1233.666	9	137.074	15.92997	0.0007	significant
A	1108.97	1	1108.970	128.878	< 0.0001	
B	0.702113	1	0.702	0.082	0.7834	
C	12.15245	1	12.152	1.412	0.2734	
A2	22.73117	1	22.731	2.642	0.1481	

B2	10.42485	1	10.425	1.212	0.3074	
C2	40.30668	1	40.307	4.684	0.0672	
AB	29.9209	1	29.921	3.477	0.1045	
AC	0.180625	1	0.181	0.021	0.8889	
BC	11.79923	1	11.799	1.371	0.2799	
Residual	60.23351	7	8.604786			
Lack of Fit	47.17623	3	15.72541	4.817361	0.0815	not significant
Pure Error	13.05728	4	3.26432			
Cor Total	1293.9	16				

Std. Dev.	2.933392		R-Squared	0.953448
Mean	69.92588		Adj R-Squared	0.893596
C.V.	4.195001		Pred R-Squared	0.400864
PRESS	775.2216		Adeq Precision	14.07842

Survivality =

69.548

-11.7738 * A

0.29625 * B

-1.2325 * C

2.3235 * A2

1.5735 * B2

-3.094 * C2

2.735 * A * B

0.2125 * A * C

-1.7175 * B * C

a) For Orange juice

	Inlet Temp (°C)	Maltodextrin Ratio	Inlet Feed Rate (mL/min)	Inlet Temp (°C)	Maltodextrin Ratio	Inlet Feed Rate (mL/min)	% Recovery	% Survival
1	-1	-1	0	100	1	50	28.6	62.59
2	1	-1	0	130	1	50	35.1	48.20
3	-1	1	0	100	2	50	33.8	61.44
4	1	1	0	130	2	50	40.3	52.44
5	-1	0	-1	100	1.5	40	39.4	66.30
6	1	0	-1	130	1.5	40	35.4	64.09
7	-1	0	1	100	1.5	60	35.6	66.14
8	1	0	1	130	1.5	60	49.6	46.48
9	0	-1	-1	115	1	40	25.6	48.22
10	0	1	-1	115	2	40	35.5	49.60
11	0	-1	1	115	1	60	36.8	50.40

12	0	1	1	115	2	60	34.5	48.16
13	0	0	0	115	1.5	50	33.3	51.40
14	0	0	0	115	1.5	50	29.1	52.41
15	0	0	0	115	1.5	50	35.6	47.66
16	0	0	0	115	1.5	50	29.1	51.45
17	0	0	0	115	1.5	50	38.7	55.12

AVOVA-1 (Recovery)

Source	Squares	DF	Square	Value	Prob > F	
Model	410.3992	9	45.59991	4.449268	0.0309	significant
A	66.125	1	66.125	6.452	0.0387	
B	40.5	1	40.500	3.952	0.0872	
C	53.045	1	53.045	5.176	0.0571	
A2	70.60642	1	70.606	6.889	0.0342	
B2	33.12853	1	33.129	3.232	0.1152	
C2	31.72642	1	31.726	3.096	0.1219	
AB	0	1	0.000	0.000	1.0000	
AC	81	1	81.000	7.903	0.0261	
BC	37.21	1	37.210	3.631	0.0984	
Residual	71.742	7	10.24886			
Lack of Fit	2.11	3	0.703333	0.040403	0.9876	not significant
Pure Error	69.632	4	17.408			
Cor Total	482.1412	16				
Std. Dev.	3.201384		R-Squared	0.851201		
Mean	35.05882		Adj R-Squared	0.659889		
C.V.	9.131463		Pred R-Squared	0.704319		
PRESS	142.56		Adeq Precision	10.06985		

Recovery =

33.16

2.875 * A

2.25 * B

2.575 * C

4.095 * A2

-2.805 * B2

2.745 * C2

0 * A * B

4.5 * A * C

-3.05 * B * C

AVOVA-1 (Survival)

Source	Sum of Squares	DF	Mean Square	F Value	Prob > F	
Model	704.599	9	78.28878	7.438483	0.0074	significant
A	256.0358	1	256.036	24.327	0.0017	
B	0.621612	1	0.622	0.059	0.8150	
C	36.26113	1	36.261	3.445	0.1058	
A2	276.8498	1	276.850	26.304	0.0014	
B2	53.01086	1	53.011	5.037	0.0597	
C2	4.521322	1	4.521	0.430	0.5331	
AB	7.263025	1	7.263	0.690	0.4336	
AC	76.10818	1	76.108	7.231	0.0311	
BC	3.2761	1	3.276	0.311	0.5943	
Residual	73.67382	7	10.52483			
Lack of Fit	45.07664	3	15.02555	2.101682	0.2428	not significant
Pure Error	28.59718	4	7.149295			
Cor Total	778.2728	16				

Std. Dev.	3.2442		R-Squared	0.905337
Mean	54.24076		Adj R-Squared	0.783627
C.V.	5.98111		Pred R-Squared	0.015886
PRESS	765.9093		Adeq Precision	8.963352

Survival =

51.607

-5.65725 * A

0.27875 * B

-2.129 * C

8.10875 * A2

-3.54825 * B2

1.03625 * C2

1.3475 * A * B

-4.362 * A * C

-0.905 * B * C