Table 1: Variables and their levels for response surface methodology

Name	Units	-1 Level	+1 Level	-alpha	+alpha
Molasses	(g/L)	2	18	-3.45434	23.45434
Peptone	(g/L)	3	27	-5.18151	35.18151
Palm oil	(% v/v)	0.1	0.7	-0.10454	0.904538

Table 2: Experimental design and Predicted responses using CCD for lipase production.

Run	Molasses (g/L)	Peptone (g/L)	Palm oil (% v/v)	Actual responses (U/mL)	Predicted responses (U/mL)
1	10	15	0.4	126.0847	120.4309027
2	18	3	0.1	88.8071	71.6337116
3	10	-5.181513966	0.4	98.47786	108.2472113
4	10	15	0.4	98.40901	120.4309027
5	18	27	0.7	140.2274	141.5405228
6	10	15	0.904537849	135.1034	117.3759794
7	10	15	0.4	116.4857	120.4309027
8	-3.454342644	15	0.4	126.5568	113.588399
9	10	15	0.4	116.3874	120.4309027
10	10	15	0.4	115.04	120.4309027
11	18	3	0.7	106.5917	124.5830053
12	2	3	0.1	116.2989	122.5473728
13	2	27	0.7	49.61758	74.35255347
14	10	15	-0.104537849	114.9318	123.485826
15	18	27	0.1	145.8629	160.2406794
16	23.45434264	15	0.4	141.8895	127.2734064
17	2	3	0.7	140.7979	133.9816562
18	10	35.18151397	0.4	140.5323	132.6145941
19	10	15	0.4	145.5187	120.4309027
20	2	27	0.1	144.9974	134.5677203

Table 3: Analysis of variance

Source Model	Sum of Squares	df	Mean Square	F-Value	p-value Prob > F	
Model	7338.244	6	1223.041	4.207578	0.0143	Significant
A-Molasses	274.1396	1	274.1396	0.943111	0.3492	
B-Peptone	646.7362	1	646.7362	2.224941	0.1597	
C-Palm oil	56.29722	1	56.29722	0.193677	0.6671	
AB	2932.755	1	2932.755	10.08944	0.0073	
AC	861.748	1	861.748	2.964637	0.1088	
BC	2566.822	1	2566.822	8.830535	0.0108	
Residual	3778.784	13	290.6757			
Lack of Fit	2575.102	8	321.8878	1.337097	0.3901	Not Significant
Pure Error	1203.682	5	240.7364			
Cor Total	11117.03	19				

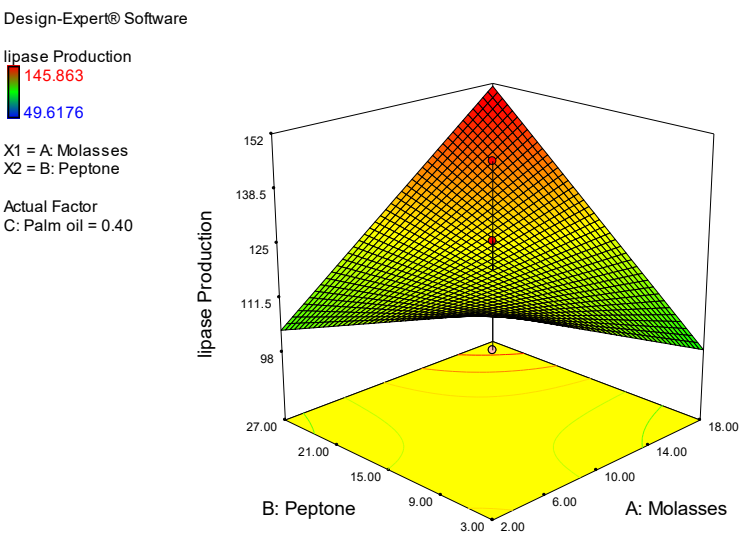

Figure 1: Molasses and peptone at a fixed level of Palm oil

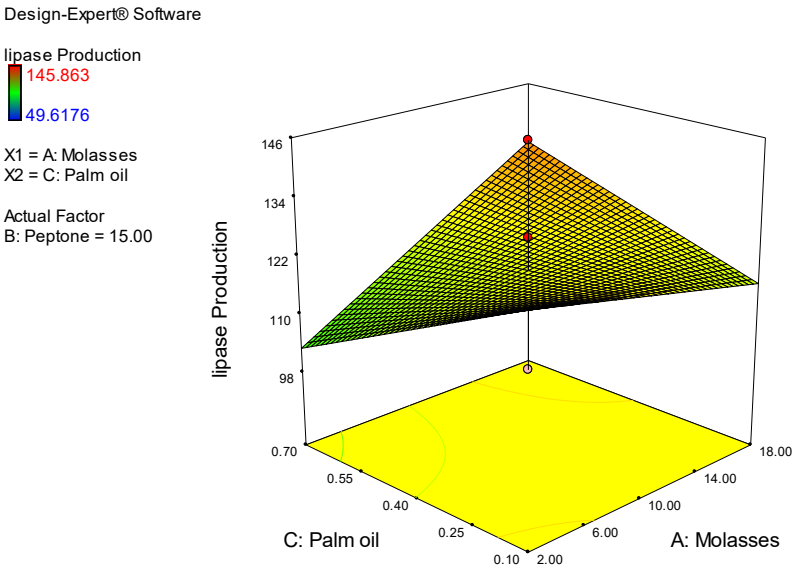

Figure 2: Palm oil and molasses at a fixed level of peptone

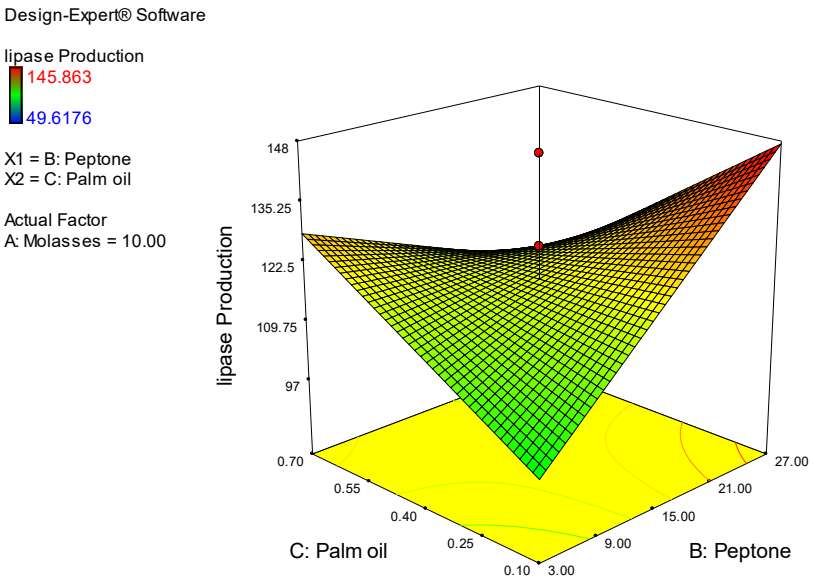

Figure 2: Palm oil and molasses at a fixed level of peptone

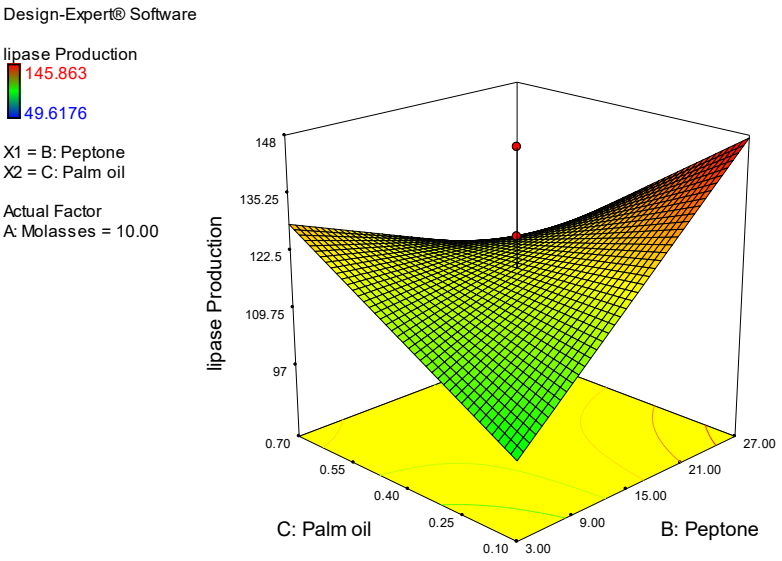

Figure 3: Peptone and palm oil at a fixed level of molasses