

Supplementary information:

Table 1-S ANOVA of CCD model for activity of immobilized α -amylase

Source	Degree of Freedom	Mean Square	F-value	P-value	Remarks
Model	15	174.1775	29.0598	< 0.0001	significant
A-C_{enz}	1	739.4818	123.3754	< 0.0001	
B-CGA	1	127.4114	21.2573	< 0.0001	
C-Time	1	770.9863	128.6317	< 0.0001	
D-pH	1	6.2881	1.0491	0.3095	
E-C_{buffer}	1	0.7048	0.1176	0.7327	
AB	1	270.0579	45.0565	< 0.0001	
AC	1	86.8459	14.4894	0.0003	
AE	1	37.0912	6.1883	0.0154	
BC	1	187.4553	31.2751	< 0.0001	
BD	1	5.6609	0.9444	0.3347	
BE	1	64.2150	10.7136	0.0017	
DE	1	27.6727	4.6169	0.0353	
A²	1	244.4831	36.4051	< 0.0001	
Residual	65	6.7156			
Lack of Fit	26	8.8742	1.6818	0.0692	not significant
Pure Error	39	5.2765			

Table 2-S ANOVA of CCD model for amount of immobilized α -amylase

Source	Degree of Freedom	Mean Square	F Value	P-value	Remarks
Model	35	109010.0878	545.9173	< 0.0001	significant
A-Cenz	1	96951.7835	485.5299	< 0.0001	
B-CGA	1	2.9131	0.0145	0.9044	
C-Time	1	1779.3697	8.9109	0.0045	
D-pH	1	1181.9522	5.9191	0.0189	
E-C_{buffer}	1	120.3886	0.6029	0.4414	
AB	1	3412.4260	17.0892	0.0001	
AC	1	1258.1199	6.3006	0.0157	
AD	1	8752.8226	43.8337	< 0.0001	
BC	1	8418.1061	42.1574	< 0.0001	
BD	1	29579.9902	148.1351	< 0.0001	
CE	1	734.6371	3.6790	0.0613	
A²	1	2911.6108	14.5812	0.0004	
B²	1	15329.8818	76.7713	< 0.0001	
E²	1	9221.4000	46.1803	< 0.0001	
ABD	1	6479.9444	32.4512	< 0.0001	
Residual	46	199.6824			
Lack of Fit	7	352.3020	2.044830163	0.0736	not significant
Pure Error	39	172.2891			
Cor Total	81				

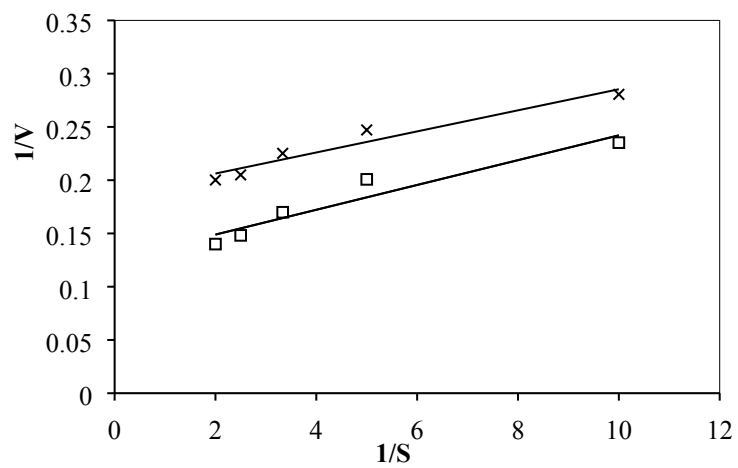


Fig. 1-S Lineweaver-Burk plot for the immobilized (■) and free (□) α -amylase