Electronic Supplementary Material (ESI) for Sustainable Food Technology.

Supplementary Table 1. Identification and biochemical characterization of bacterial isolates from various food matrices

SI.No	Isolate	Gram's staining	Catalase test	Homofermentative/ Heterofermentative	Lactic acid concentration (g/L)
I.	**Source: Milk**				
1.	DFRM1	+(ve)	-(ve)	Homofermentative	7.2
2.	DFRM2	+(ve)	-(ve)	Homofermentative	8.1
3.	DFRM4	+(ve)	-(ve)	Homofermentative	6.3
4.	**DFRM8**	**+(ve)**	**-(ve)**	**Homofermentative**	**12.6**
5.	DFRM9	+(ve)	-(ve)	Homofermentative	10.8
6.	DFRCMK1	+(ve	-(ve)	Homofermentative	3.6
7.	DFRCMK2	+(ve)	-(ve)	Homofermentative	4.5
8.	DFRMN1	+(ve)	-(ve)	Homofermentative	6.3
9.	DFRMN2	+(ve)	-(ve)	Homofermentative	6.3
10.	DFRMN3	+(ve)	-(ve)	Heterofermentative	3.6
II.	**Source: Fermented milk**				
11.	DFRFM1	+(ve)	-(ve)	Homofermentative	8.1
12.	DFRFM2	+(ve)	-(ve)	Heterofermentative	7.2
13.	DFRFM3	+(ve)	-(ve)	Homofermentative	6.3
14.	DFRFM4	+(ve)	-(ve)	Homofermentative	6.3
15.	DFRFM5	+(ve)	-(ve)	Homofermentative	3.6
16.	DFRFM8	+(ve)	-(ve)	Homofermentative	9.8
17.	DFRFM9	+(ve)	-(ve)	Homofermentative	9.0
III.	**Source: Homemade curd**				
18.	DFRC1	+(ve)	-(ve)	Homofermentative	8.1
19.	DFRC2	+(ve)	-(ve)	Heterofermentative	7.2

20. DFRC3	+(ve)	-(ve)	Homofermentative	7.2
21. DFRC4	+(ve)	-(ve)	Homofermentative	4.5
22. DFRC6	+(ve)	-(ve)	Homofermentative	5.4
23. DFRC8	+(ve)	-(ve)	Homofermentative	3.6
24. DFRC11	+(ve)	-(ve)	Heterofermentative	4.5
IV. Source: Commercially available curd				
25. DFRCM2	+(ve)	-(ve)	Heterofermentative	7.2
26. DFRCM1	+(ve)	-(ve)	Homofermentative	8.1
27. DFRCM3	+(ve)	-(ve)	Homofermentative	7.2
28. DFRCM4	+(ve)	-(ve)	Homofermentative	5.4
29. DFRCM6	+(ve)	-(ve)	Homofermentative	3.6
V. Source: Commercially available yoghurt				
30. DFRMY4	+(ve)	-(ve)	Homofermentative	9.0
31. DFRMY1	+(ve)	-(ve)	Heterofermentative	7.2
32. DFRMY2	+(ve)	-(ve)	Homofermentative	7.2
33. DFRMY3	+(ve)	-(ve)	Homofermentative	4.5
34. DFRMY4	+(ve)	-(ve)	Homofermentative	5.4
35. DFRMY5	+(ve)	-(ve)	Homofermentative	3.6
VI. Source: Dairy waste				
36. DFRMW1	+(ve)	-(ve)	Homofermentative	5.4
37. DFRMW2	+(ve)	-(ve)	Homofermentative	5.4
VII. Source: Fruit waste				
38. DFRL1	+(ve)	-(ve)	Homofermentative	8.1
39. DFRL2	+(ve)	-(ve)	Heterofermentative	7.2
40. DFRL3	+(ve)	-(ve)	Homofermentative	7.2

VIII.	**Source: Appam batter**				
41.	DFRA3	+(ve)	-(ve)	Homofermentative	6.3
42.	DFRA4	+(ve)	-(ve)	Heterofermentative	6.3
43.	DFRA9	+(ve)	-(ve)	Homofermentative	9.9
44.	DFRA3	+(ve)	-(ve)	Homofermentative	6.3
45.	DFRA4	+(ve)	-(ve)	Heterofermentative	6.3
IX.	**Source: Rava dosa batter**				
46.	DFRD1	+(ve)	-(ve)	Homofermentative	7.2
47.	DFRD2	+(ve)	-(ve)	Homofermentative	7.2
48.	DFRD3	+(ve)	-(ve)	Homofermentative	8.1
49.	DFRD4	+(ve)	-(ve)	Homofermentative	9.9
50.	DFRD11	+(ve)	-(ve)	Homofermentative	9.0
X.	**Source: Idly batter**				
51.	DFRI1	+(ve)	-(ve)	Homofermentative	7.2
52.	DFRI2	+(ve)	-(ve)	Homofermentative	8.1
53.	DFRI3	+(ve)	-(ve)	Heterofermentative	6.3
54.	DFRI4	+(ve)	-(ve)	Homofermentative	12.6
55.	DFRI5	+(ve)	-(ve)	Homofermentative	10.8
56.	DFRI6	+(ve)	-(ve)	Homofermentative	8.1
XI.	**Source: Dosa batter**				
57.	DFRD1	+(ve)	-(ve)	Homofermentative	7.2
58.	DFRD2	+(ve)	-(ve)	Homofermentative	7.2
59.	DFRD3	+(ve)	-(ve)	Homofermentative	8.1
60.	DFRD4	+(ve)	-(ve)	Homofermentative	9.9
61.	DFRD11	+(ve)	-(ve)	Homofermentative	9.0

Supplementary Table 2: Levels of each factor

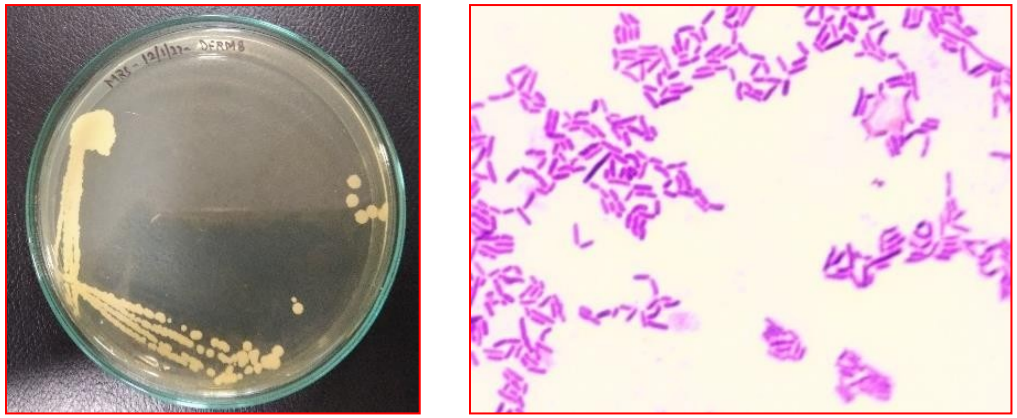
Levels/Factors	Carbon source (%)	Inoculum (%)	Temperature (°C)	pH
High level	5.0	5.0	40.0	8.0
Medium level	3.0	3.0	30.0	6.0
Low level	2.0	1.0	20.0	4.0

Supplementary Table 3. Ranking of the most important factors

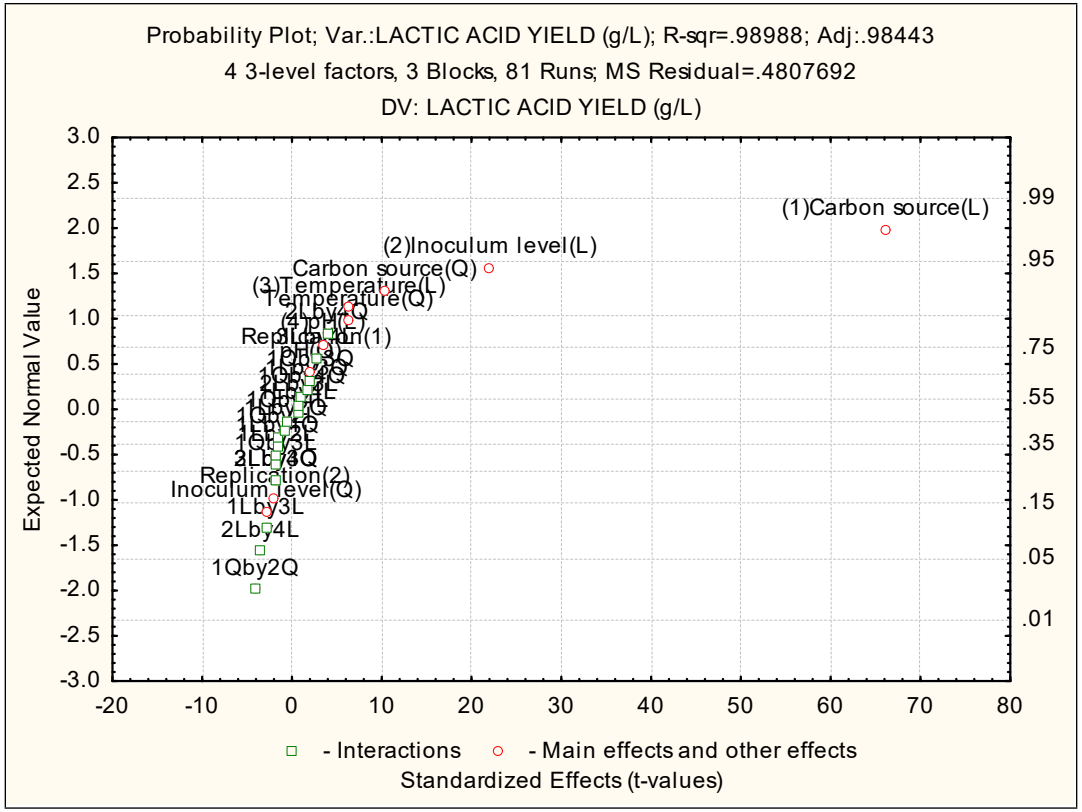
Factor	Rank	Type of relationship
Carbon source (%)	1	Positive
Inoculum (%)	2	Positive
Temperature (°C)	3	Positive
pH	4	Positive

Supplementary Table 4: Effects estimation of the factors tested

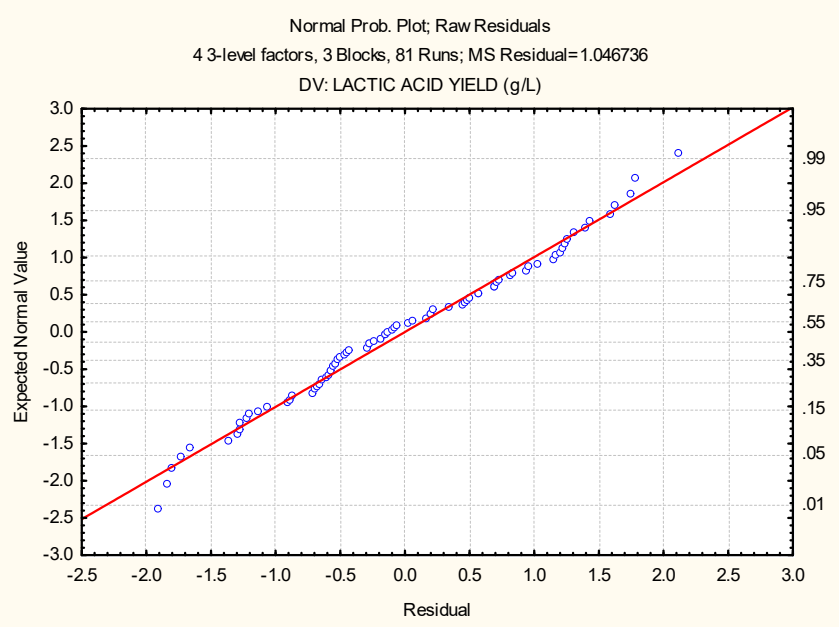
Factors	Effect	Error	t	p
Carbon source (%)	12.46667	0.188713	66.0616	**0.000000***
Inoculum (%)	4.21296	0.191316	22.0210	**0.000000***
Temperature (°C)	1.20741	0.191316	6.3111	**0.000000***
pH	0.65185	0.191316	3.4072	**0.001274***
*Values are significant at $p < 0.05$				

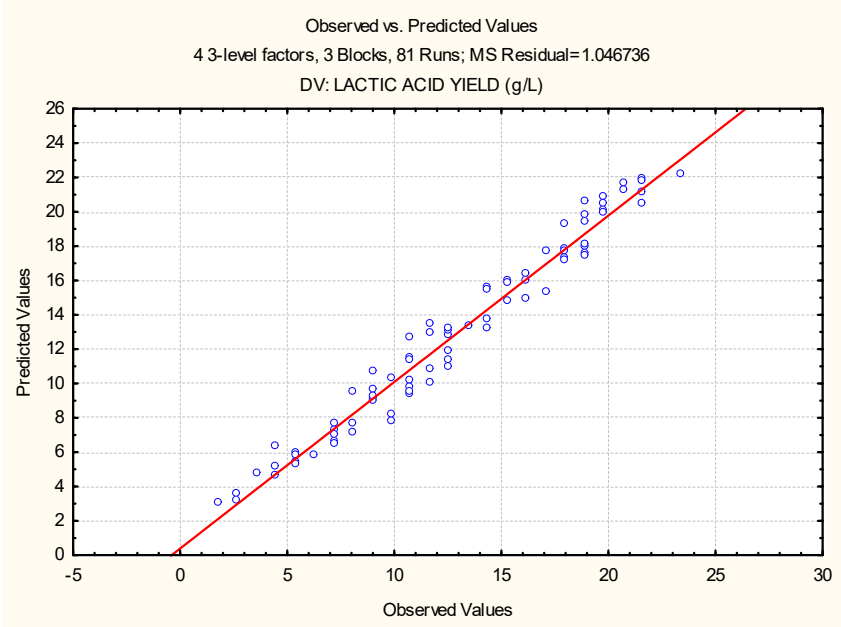


Supplementary Figure 1. Colony morphology on MRS agar and microscopic view of *Limolactibacillus fermentum* DFRM8

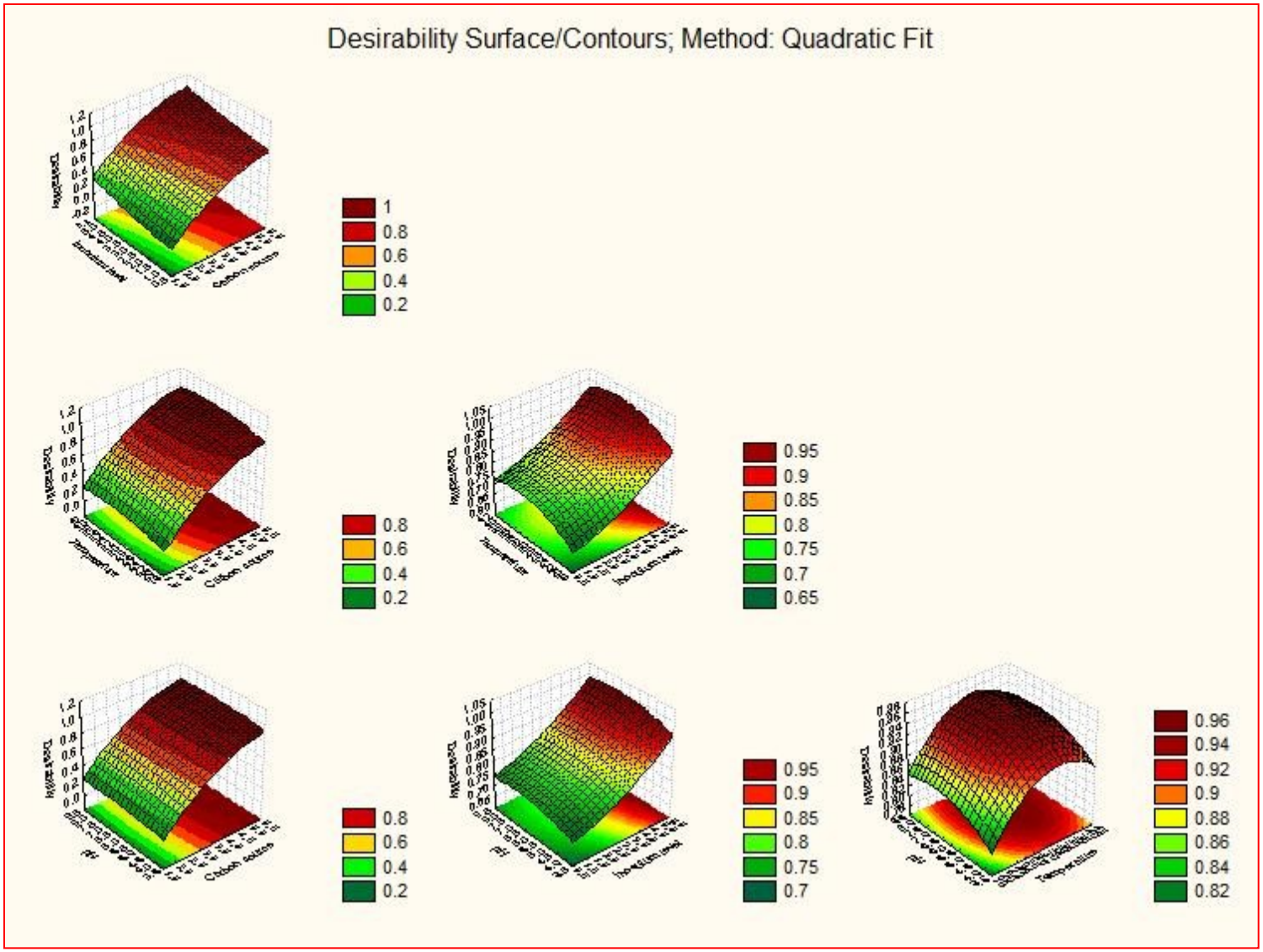


Supplementary Figure 2. Normal probability plot of main and interactive effects for lactic acid production (g/L)

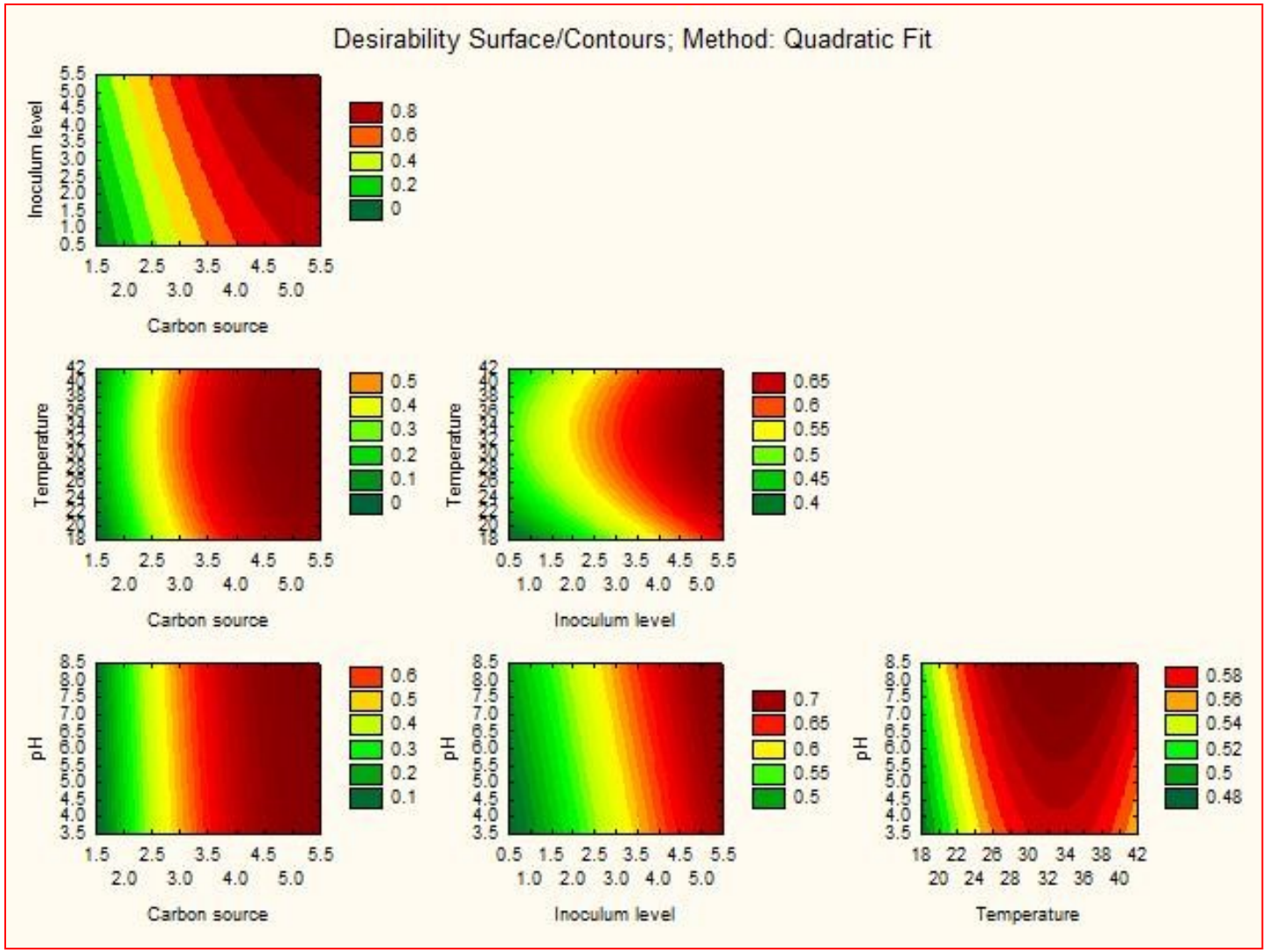




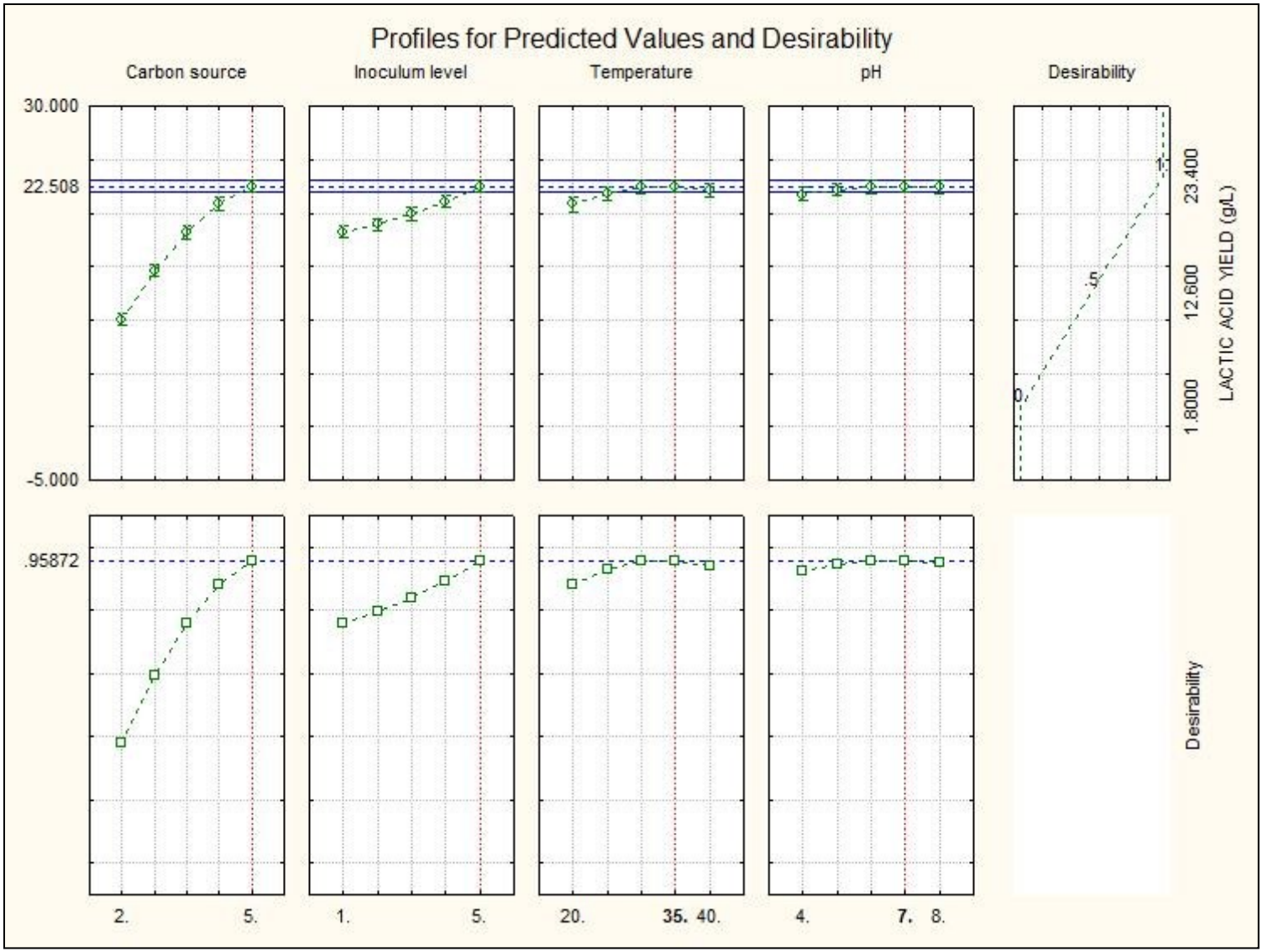
Supplementary Figure 3. Plot of raw residuals & observed values versus predicted values for lactic acid production (g/L)



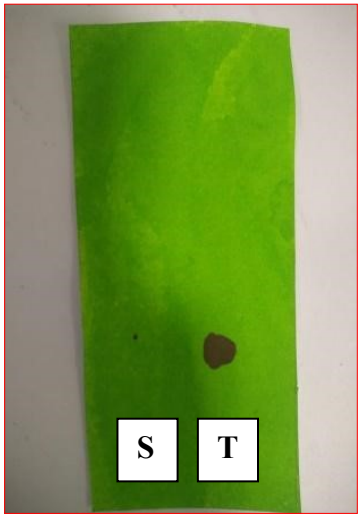
Supplementary Figure 4. Contour plot for desirability of lactic acid production (g/L)



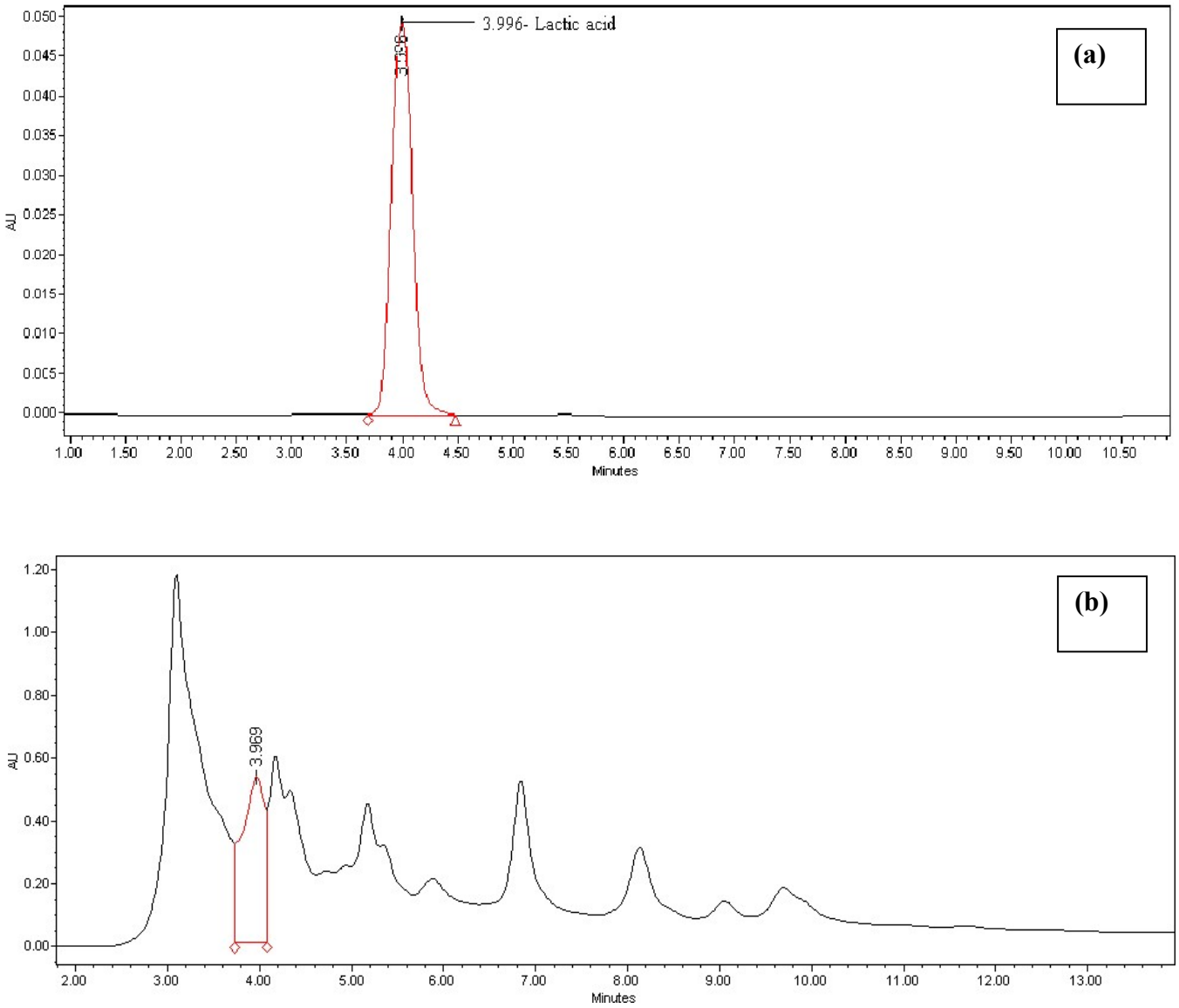
Supplementary Figure 5. Surface plot for desirability of lactic acid production (g/L)



Supplementary Figure 6. Profiles for predicted values and desirability for lactic acid production (g/L)



Supplementary Figure 7. TLC plate of standard lactic acid (S) and lactic acid produced using *Limolactibacillus fermentum* DFRM8 (T)



Supplementary Figure 8. HPLC chromatogram of standard lactic acid (a) lactic acid produced using *Limolactibacillus fermentum* DFRM8 (b)