

**Table S1.** Studied media of bacterial growth and biosurfactant production

Medium	M <sub>1</sub>		M <sub>2</sub>		M <sub>3</sub>	
Amount (g/l)						
	Glucose	20	Glucose	20	Glucose	20
	Na <sub>2</sub> HPO <sub>4</sub>	5.6	NaNO <sub>3</sub>	3	NaNO <sub>3</sub>	3
	KH <sub>2</sub> PO <sub>4</sub>	4	Yeast Extract	1	Pepton	1
	NH <sub>4</sub> NO <sub>3</sub>	4.5	KH <sub>2</sub> PO <sub>4</sub>	0.25	KH <sub>2</sub> PO <sub>4</sub>	0.25
	FeSO <sub>4</sub> ·7H <sub>2</sub> O	0.01	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25
BS (g/l)		0		0		0

Medium	M <sub>4</sub>		M <sub>5</sub>		M <sub>6</sub>	
Amount (g/l)						
	Glucose	20	Glucose	20	Lactose	15
	Na <sub>2</sub> HPO <sub>4</sub>	5.6	NaNO <sub>3</sub>	3	NaNO <sub>3</sub>	3
	KH <sub>2</sub> PO <sub>4</sub>	4	Yeast Extract	1	Yeast Extract	1
	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.2	KH <sub>2</sub> PO <sub>4</sub>	0.25	KH <sub>2</sub> PO <sub>4</sub>	0.25
	NH <sub>4</sub> NO <sub>3</sub>	4.5	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25
	FeSO <sub>4</sub> ·7H <sub>2</sub> O	0.01	NaCl	7%		
BS (g/l)		0		0		0

Medium	M <sub>7</sub>		M <sub>8</sub>		M <sub>9</sub>	
Amount (g/l)						
	Methanol	20	Maltose	20	Starch	20
	NaNO <sub>3</sub>	3	NaNO <sub>3</sub>	3	NaNO <sub>3</sub>	3
	Yeast Extract	1	Pepton	1	Pepton	1
	KH <sub>2</sub> PO <sub>4</sub>	0.25	KH <sub>2</sub> PO <sub>4</sub>	0.25	KH <sub>2</sub> PO <sub>4</sub>	0.25
	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25
BS (g/l)		0		0		0

Medium	M <sub>10</sub>		M <sub>11</sub>		M <sub>12</sub>	
Amount (g/l)						
	Glucose	20	Glucose	20	Glucose	15
	NaNO <sub>3</sub>	3	Na <sub>2</sub> HPO <sub>4</sub>	5.6	NaNO <sub>3</sub>	3
	Pepton	1	KH <sub>2</sub> PO <sub>4</sub>	4	Pepton	2
	KH <sub>2</sub> PO <sub>4</sub>	0.25	NH <sub>4</sub> NO <sub>3</sub>	4.5	KH <sub>2</sub> PO <sub>4</sub>	0.25
	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25	FeSO <sub>4</sub> ·7H <sub>2</sub> O	0.01	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25
	Trace	1 cc	Pepton	1	Trace	1 cc
			MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.2		
BS (g/l)		0		0		0

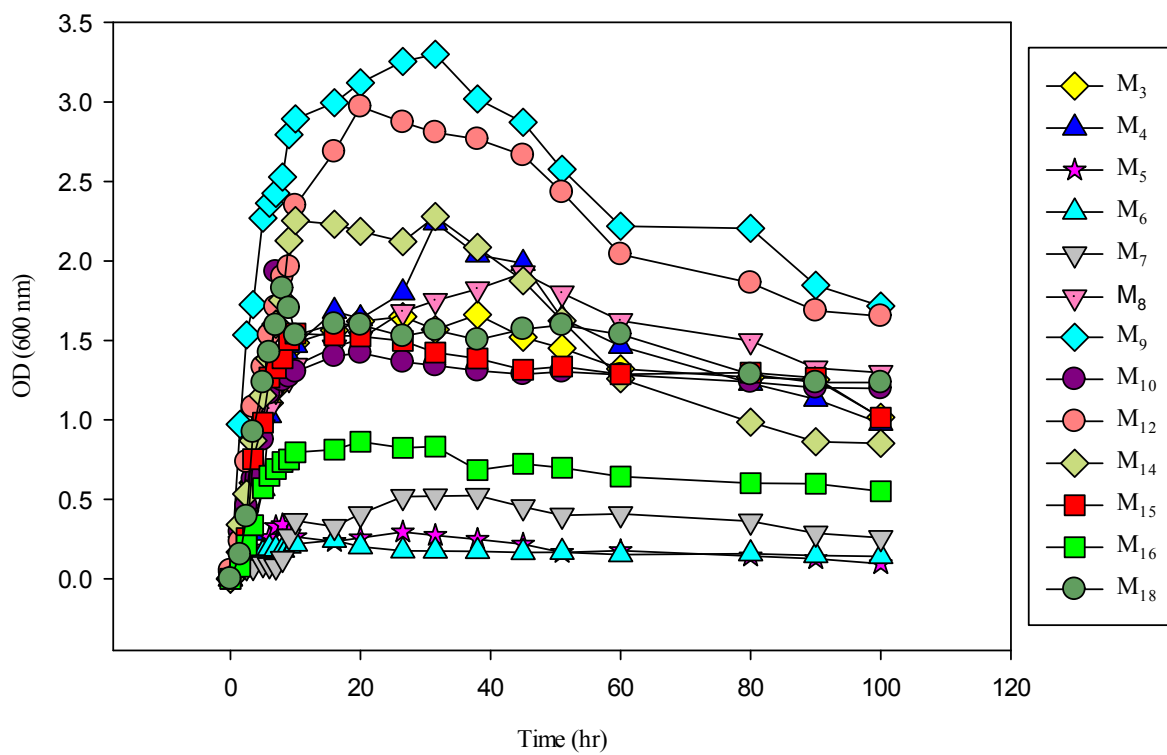
Medium	M <sub>13</sub>	M <sub>14</sub>	M <sub>15</sub>			
Amount (g/l)						
	Glucose	15	Glycerol	20	Sunflower oil	10
	Na <sub>2</sub> HPO <sub>4</sub>	5.6	Yeast Extract	45.6	CaCl <sub>2</sub> ·2H <sub>2</sub> O	0.1
	KH <sub>2</sub> PO <sub>4</sub>	4	Peptone	5	KH <sub>2</sub> PO <sub>4</sub>	2
	Peptone	2	KH <sub>2</sub> PO <sub>4</sub>	2.8	K <sub>2</sub> HPO <sub>4</sub>	5
	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.2	K <sub>2</sub> HPO <sub>4</sub> ·3H <sub>2</sub> O	4.8	NH <sub>4</sub> NO <sub>3</sub>	3
	NH <sub>4</sub> NO <sub>3</sub>	4.5			NaNO <sub>3</sub>	2
	FeSO <sub>4</sub> ·7H <sub>2</sub> O	0.01			MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.2
					Trace	1 cc
BS (g/l)		0		0		0.448

Medium	M <sub>16</sub>	M <sub>17</sub>	M <sub>18</sub>			
Amount (g/l)						
	Glucose	15	Sunflower oil	10	Sunflower oil	10
	malt extract	1	malt extract	1	NaNO <sub>3</sub>	2
	Na <sub>2</sub> HPO <sub>4</sub>	5	Na <sub>2</sub> HPO <sub>4</sub>	5	KH <sub>2</sub> PO <sub>4</sub>	2
	KCl	1	K <sub>2</sub> HPO <sub>4</sub>	1	NH <sub>4</sub> NO <sub>3</sub>	3
	NH <sub>4</sub> NO <sub>3</sub>	4	NH <sub>4</sub> NO <sub>3</sub>	4	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25
	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25	MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.25	CaCl <sub>2</sub> ·2H <sub>2</sub> O	0.1
	KH <sub>2</sub> PO <sub>4</sub>	1	KH <sub>2</sub> PO <sub>4</sub>	1	KCl	1
	FeSO <sub>4</sub> ·7H <sub>2</sub> O	0.01	FeSO <sub>4</sub> ·7H <sub>2</sub> O	0.01	malt extract	1
	Peptone	1	Peptone	1		
BS (g/l)		0.204		0.362		0.784

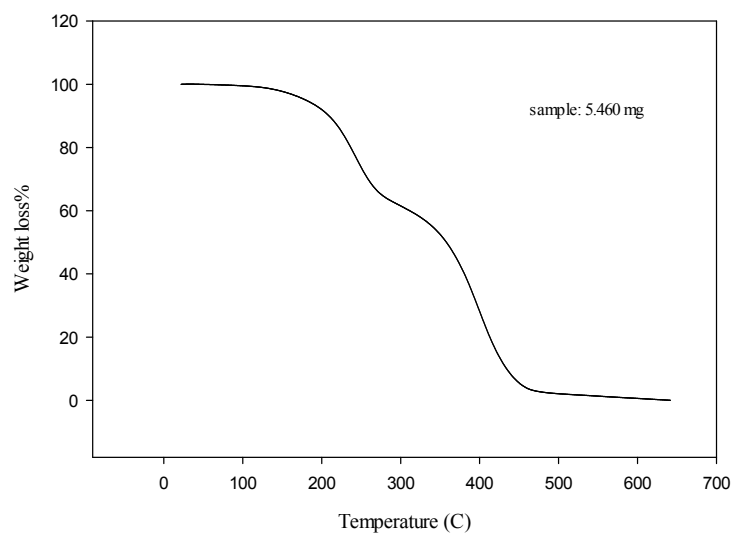


**Table S3.** Central composite design matrix of RSM with experimental values of biosurfactant production

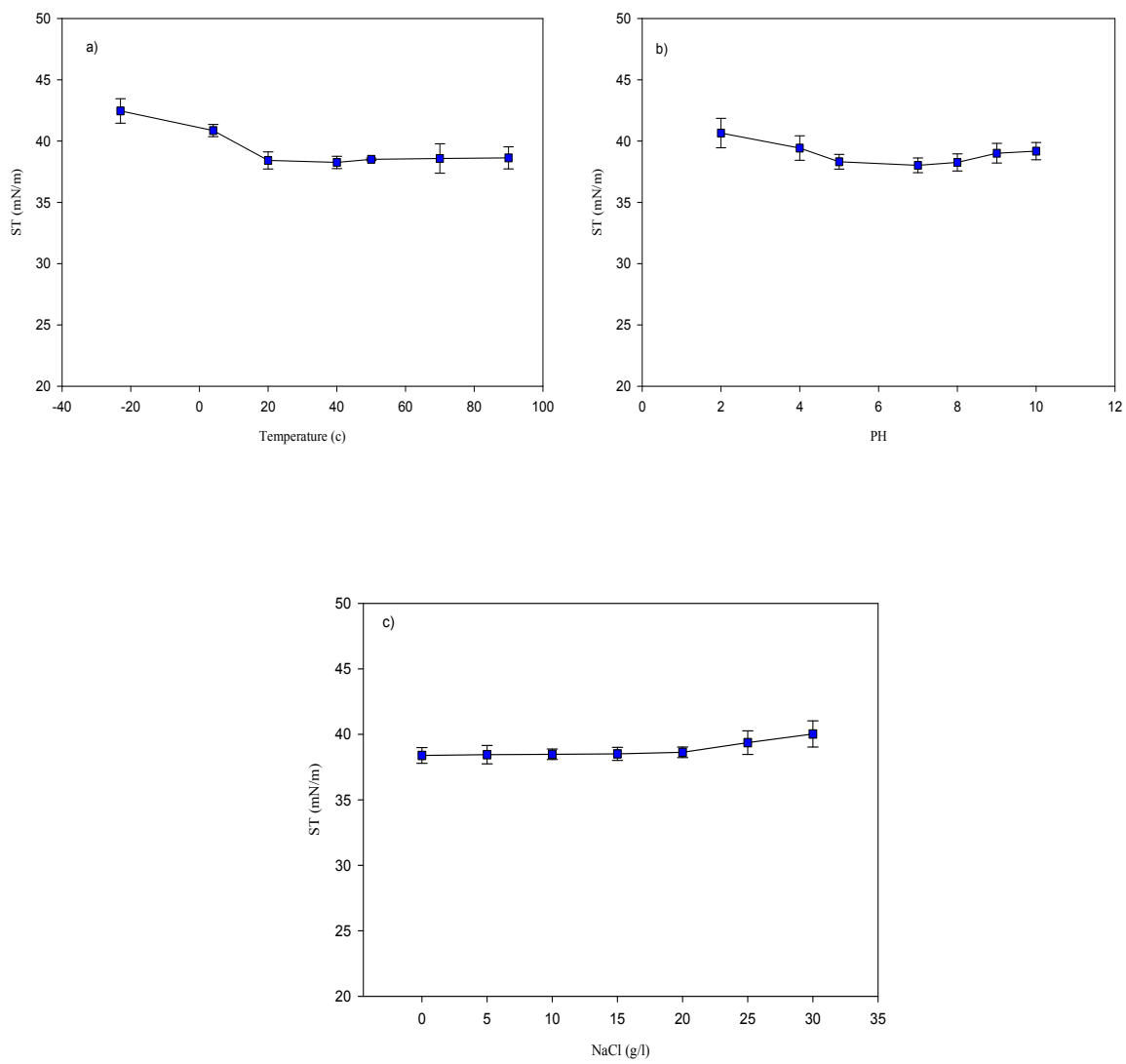
Std order	Sunflower oil	NH <sub>4</sub> NO <sub>3</sub>	MgSO <sub>4</sub> .7H <sub>2</sub> O	malt extract	BS (g/l)
29	6	2	0.6	2	0.465
12	10	3	0.2	3	0.621
2	10	1	0.2	1	0.660
8	10	3	1	1	0.652
15	2	3	1	3	0.331
23	6	2	0.6	0.75	0.273
22	6	2	1.1	2	0.572
9	2	1	0.2	3	0.311
5	2	1	1	1	0.001
24	6	2	0.6	3.25	0.428
6	10	1	1	1	0.696
3	2	3	0.2	1	0.503
19	6	0.75	0.6	2	0.491
31	6	2	0.6	2	0.466
10	10	1	0.2	3	0.765
28	6	2	0.6	2	0.391
18	11	2	0.6	2	0.884
26	6	2	0.6	2	0.472
27	6	2	0.6	2	0.383
4	10	3	0.2	1	0.858
1	2	1	0.2	1	0.206
17	1	2	0.6	2	0.187
20	6	3.25	0.6	2	0.437
7	2	3	1	1	0.087
25	6	2	0.6	2	0.495
21	6	2	0.1	2	0.526
14	10	1	1	3	1.761
13	2	1	1	3	0.634
16	10	3	1	3	0.952
11	2	3	0.2	3	0.183
30	6	2	0.6	2	0.484



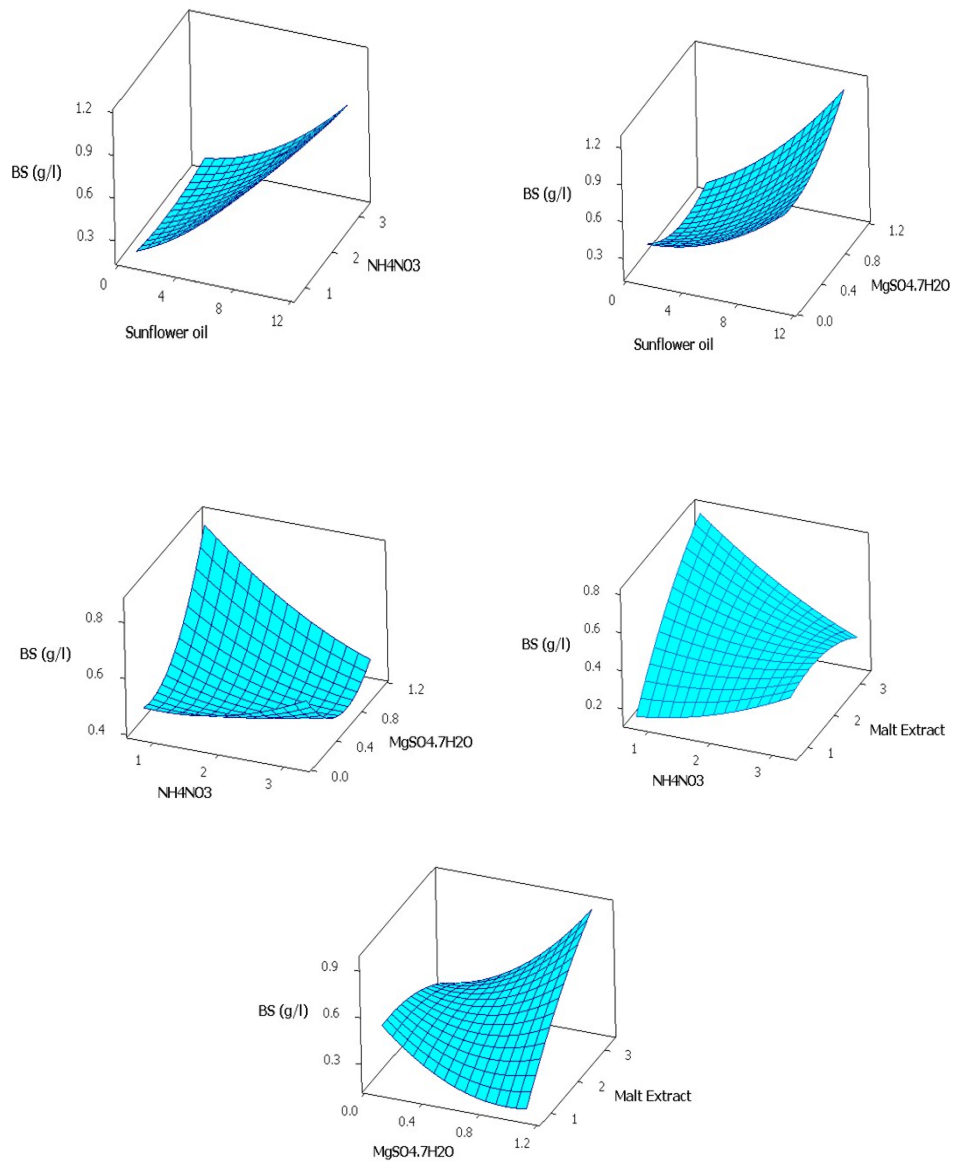
**Fig. S1.** Growth behavior of studied media



**Fig. S2.** TGA graph of the produced biosurfactant by *Bacillus tequilensis*



**Fig. S3.** Effects of different physical and chemical factors including a) Temperature b) pH and c) Salinity on the surface activity of the lipopeptide biosurfactant



**Fig. S4.** Response surface graphs resulting from mutual interaction of factors