

Table S1. Optimization of different ratios of wall material for encapsulation of lemongrass oil

S.No.	Chitosan: Acrylic acid	Surface Tension	Temperature	Conductance (μs)
1.	Water	69.75	25.9	1.58
2.	1 : 0.4	68.97	25.9	238
3.	1 : 1.2	68.02	25.8	326
4.	1 : 1.8	67.64	25.8	399
5.	1 : 1.6	66.42	25.8	454
6.	1 : 2.0	65.53	25.9	504
7.	1 : 2.4	64.60	25.8	542
8.	1 : 2.8	63.85	26.0	573
9.	1 : 3.2	62.98	26.2	611
10.	1 : 3.6	62.33	26.3	637
11.	1 : 4.0	61.70	26.5	656
12.	1 : 4.4	59.48	26.7	689
13.	1 : 4.8	60.49	26.1	713
14.	1 : 5.2	61.40	26.1	737
15.	1 : 5.6	61.57	26.4	750
16.	1 : 6.0	60.95	26.6	759
17.	1 : 6.4	60.27	26.7	777
18.	1 : 6.8	59.65	26.6	794
19.	1 : 7.2	59.59	26.8	807
20.	1 : 7.6	56.80	26.7	821
21.	1 : 8.0	57.49	26.6	840
22.	1 : 9.0	57.75	26.7	859
23.	1 : 10.0	58.72	26.7	880
24.	1 : 11.0	60.32	26.4	897
25.	0.4 : 2	67.88	27.3	168
26.	0.8 : 2	66.53	26.7	248
27.	1.2 : 2	65.87	27.1	342
28.	1.6 : 2	64.61	26.6	399
29.	2.0 : 2	63.22	26.6	468
30.	2.4 : 2	61.03	26.7	535
31.	2.8 : 2	60.26	26.9	591
32.	3.2 : 2	59.73	26.4	645
33.	3.6 : 2	59.56	26.5	688
34.	4.0 : 2	59.19	25.9	732
35.	5.0 : 2	58.73	26.2	839
36.	6.0 : 2	58.56	27.1	925
37.	7.0 : 2	58.29	28.0	993
38.	8.0 : 2	57.91	27.5	1062
39.	9.0 : 2	57.42	27.3	1117
40.	10.0 : 2	56.03	27.4	1163
41.	11.0 : 2	54.61	27.3	1206
42.	12.0 : 2	53.36	26.9	1240

43.	13.0 : 2	52.90	26.8	1271
44.	14.0: 2	51.38	26.6	1306
45.	15.0: 2	50.68	26.2	1326
46.	16.0 : 2	56.39	25.7	1357
47.	17.0 : 2	55.80	25.3	1370
48.	18.0 : 2	54.39	26.6	1391
49.	19.0 : 2	51.49	26.8	1409
50.	20.0 : 2	50.92	26.7	1426

Table S2. Post tanning process recipe for optimization of various percentage of encapsulated product in to leather

Microencapsulated product in to leather			
Process/chemicals	% of offer	Time in minutes	Remarks
Washing			
Water	100	20	Drained
Neutralization			
Water	150		
Sodium formate	1.5	20	
Sodium bicarbonate	1.0	3X5+60	
Checked for pH 5.5-6.0 and drained			
Washing (twice) with 100% water			
Water	200	15	Drained
Infusion of Lemongrass oil			
Microencapsulated lemongrass oil	X	30	
Water	10		
Retanning, Dyeing, Fatliquoring			
Water	100		
Verminol liquor ASN	2	10	
Tanicor PW	6	60	
Basyntan FB6	3		
Wattle-GS powder	1		
Dye	2	60	Check penetration
Verminol liquor ASN	8	20	
Lipodermliquor FB2	2	60	
Lipodermliquor SA	4		
Fixing			
Formic acid	2	3X5+40	Check exhaustion and drained
Check for pH 3.0-3.5 and drained			

X-1,2,3,4,5 and 6%

Table S3. Post Tanning Process Recipe for Control leather

Process/chemicals	% of offer	Time in minutes	Remarks
Washing			
Water	100	20	Drained
Neutralization			
Water	150		
Sodium formate	1.5	20	
Sodium bicarbonate	1.0	3X5+60	
Checked for pH 5.5-6.0 and drained			
Washing(twice)			
Water	200	15	Drained
Retanning, Dyeing, Fatliquoring			
Water	100		
Verminol liquor ASN	2	10	
Tanicor PW	6	60	
Basyntan FB6	3		
Wattle-GS powder	1		
Dye	2	60	Check penetration
Verminol liquor ASN	8	20	
Lipoderm liquor FB2	2	60	
Lipoderm liquor SA	4		
Fixing			
Formic acid	2	3X5+40	Check exhaustion and drained
Check for pH 3.0-3.5 and drained			

Table S4. Post Tanning Process Recipe for Experimental (Lemongrass oil infused) leather

Process/chemicals	% of offer	Time in minutes	Remarks
Washing			
Water	100	20	Drained
Neutralization			
Water	150		
Sodium formate	1.5	20	
Sodium bicarbonate	1.0	3X5+60	
Checked for pH 5.5-6.0 and drained			
Washing (twice) with 100% water			
Water	200	15	Drained
Infusion of Lemongrass oil			
Microencapsulated lemongrass oil	5	30	
Water	10		
Retanning, Dyeing, Fatliquoring			
Water	100		
Verminol liquor ASN	2	10	
Tanicor PW	6	60	
Basyntan FB6	3		
Wattle-GS powder	1		
Dye	2	60	Check penetration
Verminol liquor ASN	8	20	
Lipodermliquor FB2	2	60	
Lipodermliquor SA	4		
Fixing			
Formic acid	2	3X5+40	Check exhaustion and drained
Check for pH 3.0-3.5 and drained			

Figure S1. Hydrodynamic diameter of the encapsulated lemongrass oil obtained by emulsion polymerization technique

