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APPENDIX

Table 1 Average fibers diameter of surface of pure bacterial cellulose and TiO₂ impregnated bacterial cellulose prepared at different molar ratio

Molar ratio of TTIP: H ₂ O in EtOH	Average fibers diameter (nm)
0 (pure BC)	37.2 ± 11.8
0.031	19.2 ± 5.6
0.063	23.9 ± 6.0
0.125	73.9 ± 20.6
0.250	82.0 ± 66.2
0.500	118.7 ± 41.3
1.000	129.4 ± 34.6
2.000	281.0 ± 75.8

Table 2 Average fibers diameter of cross section of pure bacterial cellulose and TiO₂ impregnated bacterial cellulose prepared at different molar ratio

Molar ratio of TTIP: H ₂ O in EtOH	Average fibers diameter (nm)
0 (pure BC)	37.2 ± 11.8
0.031	22.8 ± 6.1
0.063	30.0 ± 8.7
0.125	37.4 ± 18.3
0.250	45.9 ± 21.9
0.500	59.3 ± 35.0
1.000	60.8 ± 35.0
2.000	99.9 ± 70.9

Table 3 The content of the synthesized TiO₂ in bacterial cellulose

Molar ratio of TTIP: H ₂ O in EtOH	% Average of TiO ₂ in BC
0.031	6.45 ± 0.42
0.063	11.89 ± 0.58
0.125	16.73 ± 1.75
0.250	19.56 ± 1.23
0.500	32.88 ± 0.11
1.000	39.38 ± 1.10
2.000	48.44 ± 1.59

Table 4 Absorbance of MB solution (0.5%w/v) containing TiO₂ impregnated bacterial cellulose prepared at different molar ratio under irradiation of UV light for different time

Time (Min)	Molar ratio	0	0.031	0.063	0.125	0.5	2
0	Vial No.1	0.906	0.265	0.354	0.185	0.565	0.710
	Vial No.2	0.907	0.377	0.344	0.135	0.399	0.729
	Vial No.3	0.909	0.254	0.287	0.128	0.489	0.753
5	Vial No.1	0.893	0.185	0.342	0.157	0.510	0.681
	Vial No.2	0.895	0.332	0.333	0.123	0.366	0.700
	Vial No.3	0.902	0.229	0.275	0.113	0.415	0.722
10	Vial No.1	0.870	0.165	0.339	0.130	0.463	0.660
	Vial No.2	0.875	0.272	0.315	0.107	0.342	0.675
	Vial No.3	0.886	0.230	0.257	0.090	0.388	0.692
20	Vial No.1	0.821	0.124	0.315	0.102	0.400	0.611
	Vial No.2	0.831	0.183	0.275	0.084	0.295	0.621
	Vial No.3	0.851	0.197	0.216	0.066	0.328	0.629
30	Vial No.1	0.764	0.091	0.281	0.068	0.355	0.564
	Vial No.2	0.777	0.160	0.244	0.057	0.250	0.564
	Vial No.3	0.808	0.147	0.199	0.039	0.285	0.563
60	Vial No.1	0.494	0.044	0.217	0.015	0.154	0.361
	Vial No.2	0.550	0.083	0.201	0.007	0.128	0.293
	Vial No.3	0.645	0.087	0.138	0.002	0.142	0.274
90	Vial No.1	0.248	0.035	0.176	0.001	0.024	0.214
	Vial No.2	0.334	0.052	0.172	0.001	0.040	0.078
	Vial No.3	0.491	0.059	0.117	0.001	0.054	0.040
120	Vial No.1	0.056	0.028	0.144	0.000	0.000	0.068
	Vial No.2	0.171	0.026	0.140	0.001	0.002	0.001
	Vial No.3	0.347	0.032	0.095	0.000	0.008	0.000

Table 5 Absorbance of MB solution (0.5%w/v) containing TiO₂ impregnated bacterial cellulose prepared at different molar ratio none irradiation of UV light for different time

Time (Min)	Molar ratio	0	0.031	0.063	0.125	0.5	2
0	Vial No.1	0.911	0.407	0.277	0.149	0.398	0.734
	Vial No.2	0.91	0.276	0.407	0.240	0.405	0.778
	Vial No.3	0.914	0.285	0.302	0.238	0.332	0.725
5	Vial No.1	0.91	0.375	0.248	0.148	0.393	0.732
	Vial No.2	0.909	0.264	0.407	0.224	0.403	0.773
	Vial No.3	0.913	0.268	0.301	0.228	0.332	0.719
10	Vial No.1	0.909	0.361	0.247	0.144	0.387	0.729
	Vial No.2	0.908	0.259	0.406	0.218	0.399	0.773
	Vial No.3	0.912	0.256	0.301	0.221	0.330	0.717
20	Vial No.1	0.908	0.354	0.242	0.138	0.384	0.729
	Vial No.2	0.907	0.255	0.404	0.215	0.395	0.771
	Vial No.3	0.911	0.248	0.299	0.220	0.328	0.715
30	Vial No.1	0.908	0.348	0.241	0.136	0.377	0.726
	Vial No.2	0.907	0.250	0.403	0.212	0.391	0.766
	Vial No.3	0.91	0.238	0.298	0.216	0.324	0.711
60	Vial No.1	0.906	0.340	0.239	0.127	0.367	0.721
	Vial No.2	0.905	0.242	0.401	0.199	0.382	0.763
	Vial No.3	0.908	0.227	0.297	0.197	0.314	0.706
90	Vial No.1	0.906	0.329	0.237	0.122	0.358	0.715
	Vial No.2	0.904	0.239	0.401	0.194	0.366	0.761
	Vial No.3	0.908	0.209	0.296	0.191	0.305	0.698
120	Vial No.1	0.906	0.320	0.236	0.116	0.352	0.712
	Vial No.2	0.904	0.233	0.400	0.187	0.362	0.732
	Vial No.3	0.908	0.199	0.294	0.187	0.300	0.693

Table 6 The average degradation MB efficiency (%) of TiO₂ impregnated bacterial cellulose prepared at different molar ratio under irradiation of UV light for different time

Min	Molar ratio of TTIP: H ₂ O in EtOH					
	0	0.031	0.063	0.125	0.5	2
0	0.00	0.00	0.00	0.00	0.00	0.00
5	1.07	10.30	0.52	5.73	10.55	3.47
10	3.23	21.44	7.50	22.82	16.82	7.29
20	7.94	40.18	17.68	41.40	28.77	14.89
30	13.67	52.70	35.71	61.45	37.69	22.26
60	37.74	72.60	43.55	85.65	68.50	56.93
90	60.56	79.57	52.66	95.65	89.17	83.89
120	78.93	87.10	61.43	95.86	98.23	95.07

Table 7 Colony forming unit counts (cfu/ml) of TiO₂ impregnated bacterial cellulose prepared at different molar ratios of TTIP: H₂O against *S. aureus*

Sample prepared from different Molar ratio of TTIP to water in EtOH	Plate No.			Average	S.D.
	1	2	3		
0.000	196	185	199	193.33	7.37
0.125	120	127	111	119.33	8.02
0.500	19	30	39	29.33	10.02
2.000	148	160	154	154.00	6.00

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