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APPENDICES

Appendix A preparation of pure bacterial cellulose

Table A1 The Production of Pure Bacterial Cellulose 1-9 Days in Wet State

Days	weight (gram)			Average (gram)	SD
	1	2	3		
2	0.2593	0.4614	0.1382	0.2863	0.1632
3	0.7029	0.5975	0.9347	0.7450	0.1725
4	1.1457	0.9433	1.1486	1.0792	0.1177
5	1.5851	1.6679	1.4245	1.5591	0.1237
6	2.6757	2.2851	2.3465	2.4357	0.2100
7	2.3988	2.7894	2.3832	2.5238	0.2301
8	3.1675	2.304	2.9042	2.7913	0.4418
9	3.21	3.0313	3.0054	3.0822	0.1114

Table A2 The Production of Pure Bacterial Cellulose 1-9 Days in Dry State

Days	weight (gram)			Average (gram)	SD
	1	2	3		
2	0.0057	0.0058	0.0059	0.0058	0.0001
3	0.0113	0.0117	0.0118	0.0116	0.0002
4	0.0134	0.0134	0.0151	0.0139	0.0009
5	0.0172	0.0158	0.0183	0.0171	0.0012
6	0.0174	0.0178	0.0168	0.0173	0.0055
7	0.0206	0.0223	0.022	0.0216	0.0009
8	0.02	0.0249	0.0216	0.0221	0.0024
9	0.0257	0.0236	0.0245	0.0246	0.0010

Appendix B Preparation of BC/Cotton Composite

Table B1 The Production of BC/Cotton 2 Days in Wet State

Sample No.	Fabric containing high density of cotton fiber	Fabric containing medium density of cotton fiber	Fabric containing low density of cotton fiber
1	0.6433	0.4785	0.226
2	0.4702	0.5162	0.202
3	0.4814	0.4343	0.1942
4	0.6991	0.4844	0.2391
5	0.5544	0.4285	0.2409
Average (gram)	0.5696	0.4683	0.2204
SD	0.1001	0.0367	0.0213

Table B2 The Production of BC/Cotton 2 Days in Dry State

Sample No.	Fabric containing high density of cotton fiber	Fabric containing medium density of cotton fiber	Fabric containing low density of cotton fiber
1	0.0103	0.0076	0.0051
2	0.0086	0.0072	0.0053
3	0.0082	0.0079	0.0061
4	0.0096	0.0069	0.0058
5	0.01	0.0075	0.0055
Average (gram)	0.0093	0.0074	0.0055
SD	0.009	0.0003	0.0003

Table B3 The Thickness of BC/Cotton 2 Days in Wet State

Sample No.	Fabric containing high density of cotton fiber	Fabric containing medium density of cotton fiber	Fabric containing low density of cotton fiber
1	1.31	1.25	1.05
2	1.26	1.19	0.97
3	1.23	1.2	0.94
4	1.31	1.15	0.96
5	1.27	1.17	0.97
Average (gram)	1.276	1.192	0.0978
SD	0.0343	0.0376	0.0420

Table B4 The Thickness of BC/Cotton 2 Days in Dry State

Sample No.	Fabric containing high density of cotton fiber	Fabric containing medium density of cotton fiber	Fabric containing low density of cotton fiber
1	1.27	1.09	0.85
2	1.21	1.13	0.96
3	1.26	1.1	0.98
4	1.36	1.05	0.95
5	1.26	1.15	0.99
Average (gram)	1.272	1.104	0.0946
SD	0.0544	0.0384	0.0559

Appendix C preparation of BC/Cotton Composite Treated Surface by DBD Plasma Non-Immobilization

Table C1 The Production of BC/Cotton 2 Days Treated Surface by DBD Plasma in Wet State

Treatment times (seconds)	1	2	3	Average (gram)	SD
0	0.4702	0.4814	0.5544	0.502	0.0457
10	0.5139	0.5207	0.5281	0.5209	0.0071
20	0.6167	0.4628	0.5511	0.5435	0.0772
30	0.5012	0.5475	0.7219	0.5902	0.1163
60	0.5304	0.5695	0.5991	0.5663	0.0344
120	0.6614	0.6607	0.6542	0.6587	0.0039
180	0.7675	0.7404	0.7206	0.74283	0.02354
240	0.7509	0.7816	0.7957	0.77606	0.02290
300	0.6985	0.7123	0.6994	0.7034	0.0077

Table C2 The Production of BC/Cotton 2 days Treated Surface by DBD Plasma in Dry State

Treatment times (seconds)	1	2	3	Average (gram)	SD
0	0.0066	0.0062	0.0056	0.0061	0.0005
10	0.0078	0.0075	0.0073	0.0075	0.0002
20	0.0071	0.0071	0.007	0.0070	0.00005
30	0.0088	0.0085	0.008	0.0084	0.0004
60	0.0087	0.0088	0.008	0.0085	0.0004
120	0.009	0.0089	0.0085	0.0088	0.0002
180	0.0089	0.0096	0.009	0.0091	0.0003
240	0.0089	0.0087	0.0079	0.0085	0.0005
300	0.0082	0.0079	0.0081	0.0080	0.0001

Appendix D Preparation of BC/Cotton Composite by Immobilization Technique

Table D1 The Production of BC/Cotton 2 Days Treated Surface by DBD Plasma in varies Different of Cotton Fabric Wet State

Sample No.	Fabric containing high density of cotton fiber	Fabric containing medium density of cotton fiber	Fabric containing low density of cotton fiber
1	0.6741	0.7058	0.7675
2	0.6607	0.6989	0.7404
3	0.6583	0.7156	0.7406
Average (gram)	0.6643	0.7067	0.7495
SD	0.0085	0.0083	0.0155

Table D2 The Production of BC/Cotton 2 Days Treated Surface by Acetic Acid, varies Different Concentration of Acetic Acid in Wet State

Concentration	0% v/v	1% v/v	2% v/v	3% v/v	4% v/v	5% v/v
1	0.5576	0.6489	0.708	0.6067	0.6537	0.6572
2	0.5666	0.6929	0.6644	0.623	0.6767	0.6671
3	0.5758	0.6155	0.6318	0.6905	0.7667	0.5751
Average (gram)	0.5666	0.6524	0.6680	0.6400	0.6990	0.6331
SD	0.0091	0.0388	0.0382	0.0440	0.0597	0.0505

Table D3 The Production of BC/Cotton 2 Days Treated Surface by Acetic Acid, varies Different Concentration of Acetic Acid in Dry State

Concentration	0% v/v	1% v/v	2% v/v	3% v/v	4% v/v	5% v/v
1	0.0065	0.0076	0.0089	0.0089	0.0099	0.0075
2	0.0066	0.0079	0.0079	0.0079	0.0087	0.0074
3	0.0064	0.0078	0.0086	0.0086	0.0088	0.0076
Average (gram)	0.0065	0.0077	0.0084	0.0084	0.0091	0.0075
SD	1E-04	0.0001	0.0005	0.0005	0.0006	1E-04

Table D4 The Production of BC/Cotton 2 Days Treated Surface by Citric acid, varies Different Concentration of Citric Acid in Wet State

Concentration	0% v/v	1% v/v	2% v/v	3% v/v	4% v/v	5% v/v
1	0.0072	0.0089	0.009	0.0086	0.0091	0.0107
2	0.007	0.0083	0.0085	0.0085	0.0091	0.011
3	0.0076	0.0081	0.009	0.0086	0.0096	0.0096
Average (gram)	0.0072	0.0084	0.0088	0.0085	0.0092	0.0104
SD	0.0003	0.0004	0.0002	0.0005	0.0002	0.0007

Table D5 The Production of BC/Cotton 2 Days Treated Surface by Citric Acid, varies Different Concentration of Citric Acid in Dry State

Concentration	0% v/v	1% v/v	2% v/v	3% v/v	4% v/v	5% v/v
1	0.5976	0.6489	0.6908	0.6867	0.7027	0.7587
2	0.5666	0.6529	0.6644	0.693	0.7154	0.7428
3	0.5758	0.6255	0.6718	0.6605	0.7287	0.7773
Average (gram)	0.58	0.6424	0.6756	0.6800	0.7156	0.7596
SD	0.0159	0.0148	0.013618	0.0172	0.0130	0.0172

Table D6 The Production of BC/Cotton 2 Days by Using Absorption and Crosslink Immobilization Technique in Wet State, treated by DBD Plasma

Sample No.	Non-immobilization	Absorption immobilization	Absorption immobilization and crosslink by glutaraldehyde vapor	Absorption immobilization and crosslink by glutaraldehyde solution
1	0.6975	0.6931	0.6237	0.74
2	0.7004	0.6948	0.6321	0.7679
3	0.7406	0.7408	0.7966	0.8854
Average (gram)	0.7128	0.7095	0.6841	0.7977
SD	0.0240	0.0270	0.0974	0.0771

Table D7 The Production of BC/Cotton 2 Days by Using Absorption and Crosslink Immobilization Technique in Dry State, Treated by DBD Plasma

Sample No.	Non-immobilization	Absorption immobilization	Absorption immobilization and crosslink by glutaraldehyde vapor	Absorption immobilization and crosslink by glutaraldehyde solution
1	0.0089	0.0092	0.01	0.0101
2	0.0096	0.0088	0.0099	0.0098
3	0.009	0.0096	0.0097	0.0099
Average (gram)	0.0091	0.0092	0.0098	0.0099
SD	0.0003	0.0004	0.0001	0.0001

Table D8 The Production of BC/Cotton 2 Days by Using Absorption and Crosslink Immobilization Technique in Wet State, Without Surface Treatment

Sample No.	Non-immobilization	Absorption immobilization	Absorption immobilization and crosslink by glutaraldehyde vapor	Absorption immobilization and crosslink by glutaraldehyde solution
1	0.4702	0.5567	0.5545	0.587
2	0.4814	0.5666	0.588	0.6353
3	0.5544	0.5758	0.596	0.5886
Average (gram)	0.502	0.5663	0.5795	0.6036
SD	0.0457	0.0092	0.0220	0.0274

Table D9 The Production of BC/Cotton 2 Days by Using Absorption and Crosslink Immobilization Technique in Dry State, Without Surface Treatment

Sample No.	Non-immobilization	Absorption immobilization	Absorption immobilization and crosslink by glutaraldehyde vapor	Absorption immobilization and crosslink by glutaraldehyde solution
1	0.0086	0.0089	0.009	0.0099
2	0.0082	0.0085	0.0089	0.0095
3	0.0096	0.0092	0.0093	0.0096
Average (gram)	0.0088	0.0088	0.0090	0.0096
SD	0.0007	0.0003	0.0002	0.0002

Table D10 The Production of BC/Cotton 2 Days by Using Absorption and Crosslink Immobilization Technique in Wet State, Treated Surface by Acetic Acid

Sample No.	Non-immobilization	Absorption immobilization	Absorption immobilization and crosslink by glutaraldehyde vapor	Absorption immobilization and crosslink by glutaraldehyde solution
1	0.7428	0.6572	0.7692	0.8503
2	0.7069	0.6671	0.8264	0.8599
3	0.7017	0.6751	0.6855	0.7344
Average (gram)	0.7171	0.6664	0.7603	0.8148
SD	0.0223	0.0089	0.0708	0.0698

Table D11 The Production of BC/Cotton 2 Days by Using Absorption and Crosslink Immobilization Technique in Dry State, Treated Surface by Acetic Acid

Sample No.	Non-immobilization	Absorption immobilization	Absorption immobilization and crosslink by glutaraldehyde vapor	Absorption immobilization and crosslink by glutaraldehyde solution
1	0.0075	0.0065	0.0089	0.0091
2	0.0077	0.0066	0.0070	0.0094
3	0.0077	0.0064	0.0075	0.0096
Average (gram)	0.0076	0.0065	0.0078	0.0093
SD	0.0001	1E-04	0.0009	0.0002

Table D12 The Production of BC/Cotton 2 Days by Using Absorption and Crosslink Immobilization Technique in Wet State, Treated Surface by Citric Acid

Sample No.	Non-immobilization	Absorption immobilization	*Absorption immobilization and crosslink by glutaraldehyde vapor	Absorption immobilization and crosslink by glutaraldehyde solution
1	0.712	0.7587	0.8027	1.0255
2	0.6989	0.7428	0.7291	0.8748
3	0.7438	0.7773	0.8055	1.0014
Average (gram)	0.7182	0.7596	0.7791	0.9672
SD	0.0230	0.0172	0.0433	0.0809

Table D13 The Production of BC/Cotton 2 Days by Using Absorption and Crosslink Immobilization Technique in Wet State, Treated Surface by Citric Acid

Sample No.	Non-immobilization	Absorption immobilization	Absorption immobilization and crosslink by glutaraldehyde vapor	Absorption immobilization and crosslink by glutaraldehyde solution
1	0.0074	0.0089	0.0085	0.0097
2	0.007	0.0067	0.009	0.0099
3	0.0072	0.0096	0.0089	0.0103
Average (gram)	0.0072	0.0084	0.0088	0.0099
SD	0.0002	0.0015	0.0002	0.0003

Table D14 The Cytoxicity of Bacterial Cellulose

Sample condition	Average	
	OD 570 nm	**percentage**
Ideal sample	1.470	100
Non-toxic sample	1.440	98
toxic sample	0.008	0
Pure BC	1.145	78
BC/Cotton composite	1.368	93
BC/Nylon composite	1.374	93

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Proceeding :

1. Tipplook, M.; and Rujiravanit, R. (2015, April 21nd) Development of bacterial cellulose-based wound dressing material: Effect of cell immobilization. Proceeding of The 6th Research Symposium on Petrochemical and materials Technology and 21th PPC Symposium on Petroleum, Petrochemical, and Polymers, Bangkok, Thailand.

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