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APPENDICES

Appendix 1. Composition of Fermentation Medium of Each Step of Starter Culture Preparation

	Step 1	Step 2	Step 3
Black tea (g)	0.5	2	-
Table sugar (g)	5	20	-
Molasses (g)	-	20	100
Total Volume (ml)	50	200	1000
Water (ml)	45	180	-
200mM acetate buffer pH 4.75 (ml)	-	-	900
Culture (ml)	5[a]	20[b]	100[c]

Appendix 2. Composition of Fermentation Medium of Each Setups

		Molasses (g)	Caffeine (mg)	200 mM acetate buffer (ml)			Water (ml)	Culture (ml)
				pH 4.0	pH 4.75	pH 5.5		
Molasses Concentration (w/v)	Level 1	50	250	-	450	-	-	50
	Level 2	75	250	-	450	-	-	50
	Level 3	100	250	-	450	-	-	50
Caffeine Concentration (mg/L)	Control	75	0	-	450	-	-	50
	Level 1	75	150	-	450	-	-	50
	Level 2	75	250	-	450	-	-	50
	Level 3	75	350	-	450	-	-	50
pH of 200 mM Acetate Buffer	Control	75	250	-	-	-	450	50
	Level 1	75	250	450	-	-	-	50
	Level 2	75	250	-	450	-	-	50
	Level 3	75	250	-	-	450	-	50

Appendix 3. Result of Experiment 1: Effect of Different Initial Molasses Concentration on the Yield and the Properties of Bacterial Cellulose Biofilms

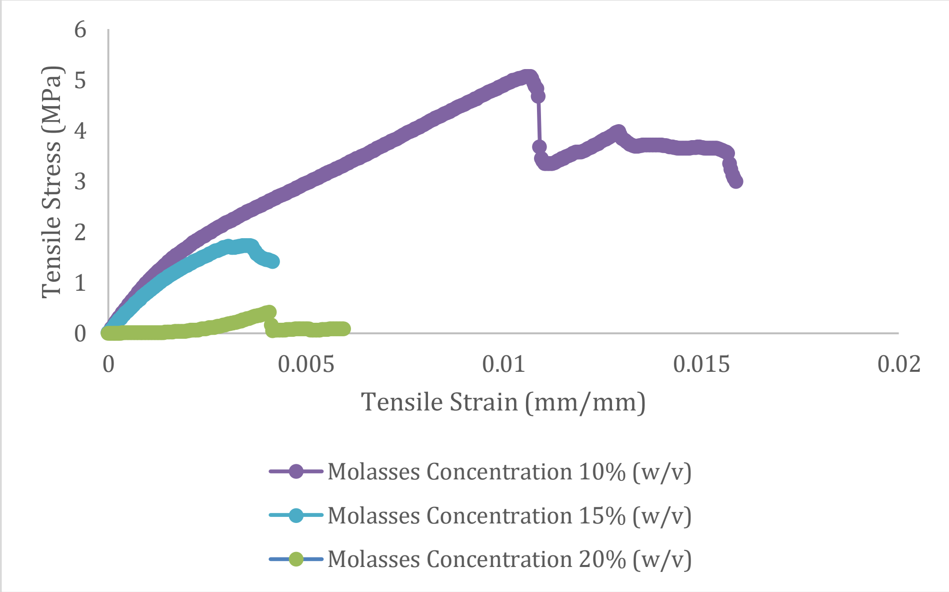
Appendix 3.1. Physical appearance of BC biofilms produced at different initial molasses concentration. From left to right: produced at 10%, 15%, and 20% (w/v) molasses concentration

Appendix 3.2. Result of Experiment 1

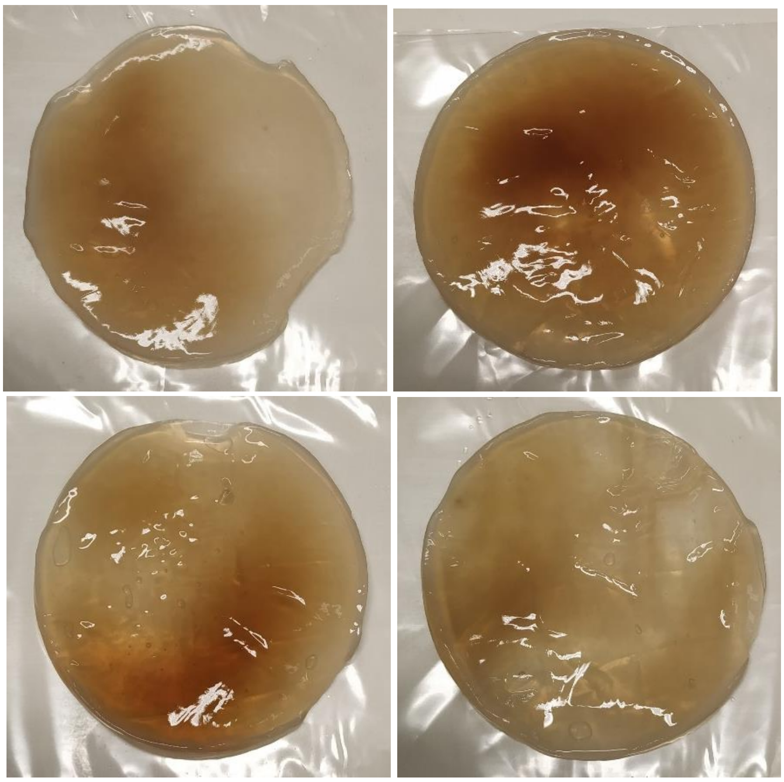
	Molasses Concentration (w/v)		
	10%	15%	20%
BC Yield (g/L)	1.32±0.30^{a}	1.29±0.45^{a}	0.36±0.07^{a}
Tensile Strength (MPa)	24.91±0.96^{a}	14.22±2.21^{b}	3.00±0.66^{c}
Elongation Percentage (%)	1.02±0.35^{a}	1.42±0.38^{b}	0.29±0.10^{b}
Young’s Modulus (MPa)	1205.6±40.86^{a}	766.99±26.53^{b}	-
Water Holding Capacity (%)	297.9±29.6^{a}	366.1±56.6^{a}	233.9±37.8^{a}
Initial pH	4.75±0.02	4.74±0.02	4.74±0.03
Final pH	4.31±0.05	4.25±0.01	4.27±0.05

^{a,b,c}*Means in the same row bearing different superscript letters differ significantly (P<0.05). Values represent means ± standard error of quadruplicate experiments.*

Appendix 3.3. Stress-strain Curve of Samples Produced at Different Molasses Concentration



Appendix 4. Result of Experiment 2: Effect of Different Initial Caffeine Concentration on the Yield and the Properties of Bacterial Cellulose Biofilms



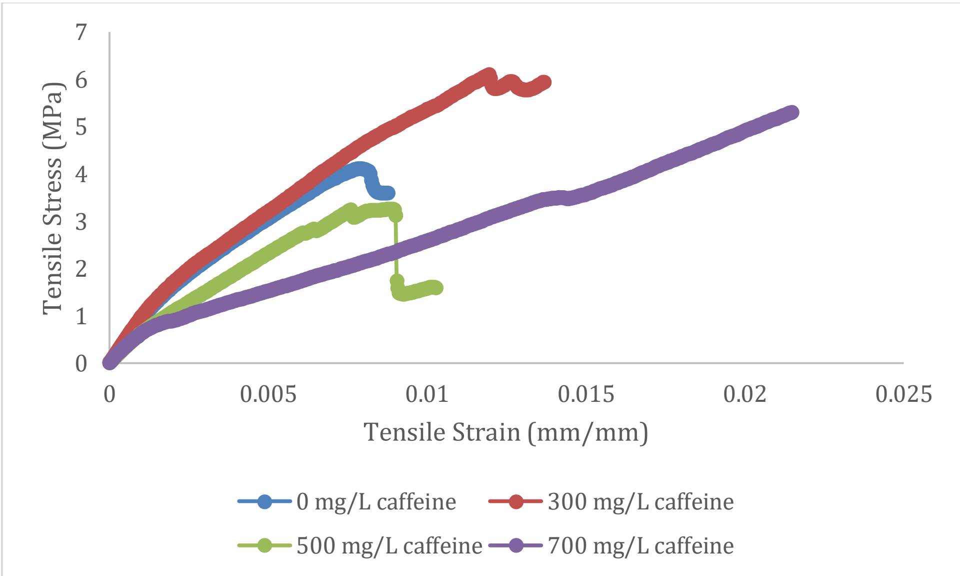
Appendix 4.1. Physical Appearance of BC Produced at Different Caffeine Concentration
First row, from left to right: produced at 0 mg/L and 300 mg/L caffeine concentration
Second row, from left to right: produced at 500 and 700 mg/L caffeine concentration

Appendix 4.2. Result of Experiment 2

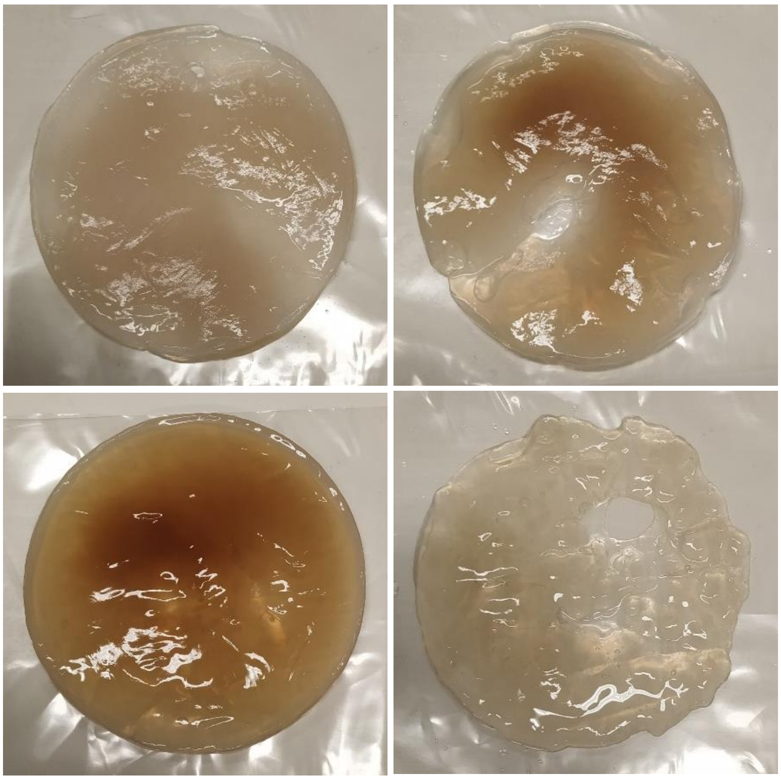
	Caffeine Concentration (mg/L)			
	0 (Control)	300	500	700
BC Yield (g/L)	0.59±0.07[a]	1.43±0.57[a]	1.29±0.45[a]	0.9±0.23[a]
Tensile Strength (MPa)	29.14±5.06[a]	32.36±0.86[a]	14.22±2.21[b]	31.24±7.94[a]
Elongation Percentage (%)	1.29±0.31[a]	2.61±0.33[c]	1.42±0.38[a,b]	2.3±0.17[b,c]
Young's Modulus (MPa)	553.53±0.95[a]	254.65±2.66[b]	766.99±26.53[c]	166.20±6.09[d]
Water Holding Capacity (%)	216.8±27.9[a]	183±20.7 [a]	366.1±56.6[a]	272.4±57.1[a]
Initial pH	4.75±0.01	4.75±0.02	4.74±0.02	4.76±0.02
Final pH	4.18±0.03	4.24±0.01	4.25±0.01	4.26±0.03

[a,b,c,d] Means in the same row bearing different superscript letters differ significantly (P<0.05). Values represent means ± standard error of quadruplicate experiments.

Appendix 4.3. Stress-strain Curve of Samples Produced at Different Caffeine Concentration



Appendix 5. Result of Experiment 3: Effect of Different Initial pH of Acetate Buffer on the Yield and the Properties of Bacterial Cellulose Biofilms



Appendix 5.1. Physical Appearance of BC Produced at Different pH of Acetate Buffer

First row, from left to right: produced in non-buffered and acetate buffered medium at pH 4.0

Second row, from left to right: produced in acetate buffered medium at pH 4.75 and 5.5

Appendix 5.2. Result of Experiment 2

	pH of 200 mM Acetate Buffer			
	Non Buffered (Control)	4.0	4.75	5.5
BC Yield (g/L)	0.99±0.12^{a}	0.43±0.07^{a}	1.29±0.45^{a}	0.37±0.07^{a}
Tensile Strength (MPa)	23.29±2.98^{a}	28.33±1.84^{a}	14.22±2.21^{b}	32.34±4.73^{a}
Elongation Percentage (%)	3.55±0.19^{a}	0.97±0.28^{b}	1.42±0.38^{b}	1.52±0.64^{b}
Young’s Modulus (MPa)	630.91±17.90^{a}	469.44±29.04^{b}	766.99±26.53^{c}	248.34±17.64^{d}
Water Holding Capacity (%)	122.1±18.1^{a}	182.9±19.5^{a}	366.1±56.6^{b}	209.2±23.2^{a}
Initial pH	4.64±0.01	4.10±0.04	4.74±0.02	5.25±0.01
Final pH	3.44±0.01	3.70±0.01	4.25±0.01	4.63±0.04

^{a,b,c,d} *Means in the same row bearing different superscript letters differ significantly (P<0.05). Values represent means ± standard error of quadruplicate experiments.*

Appendix 5.3. Stress-strain Curve of Samples Produced at Different pH of Acetate Buffer