

Table 1. Formulations assayed for the study of bacterial cellulose based films combined with glycerol and polyvinyl alcohol (PVOH) and experimental results for the mechanical and permeability properties of the films. TS is tensile strength, %E is percentage of elongation at break, YM is Young's modulus and WVP is water vapour permeability.

Exp.	Glycerol % (w/w)	PVOH % (w/w)	Moisture content %	TS MPa	%E %	YM MPa	WVP g/m s Pa
1	0	0	1.82	20.76	2.28	1043.88	$2.38 \cdot 10^{-11}$
2	0	2.5	8.15	34.63	3.67	1489.15	$1.87 \cdot 10^{-11}$
3	0	5	8.19	35.05	6.44	1222.38	$2.11 \cdot 10^{-11}$
4	2.5	0	87.72	2.50	25.34	13.43	$5.92 \cdot 10^{-11}$
5	2.5	2.5	48.07	4.44	39.23	21.94	$1.72 \cdot 10^{-10}$
6	2.5	5	28.53	9.47	37.58	46.93	$1.12 \cdot 10^{-10}$
7	5	0	91.10	1.23	19.21	11.72	$8.95 \cdot 10^{-11}$
8	5	2.5	65.79	2.15	24.62	10.84	$1.78 \cdot 10^{-10}$
9	5	5	50.37	13.78	49.89	23.13	$2.04 \cdot 10^{-10}$

Table 2. Analysis of variance (ANOVA) for each of the study dependent variables. A is glycerol (% w/w), B is polyvinyl alcohol (% w/w), TS is tensile strength, %E is percentage of elongation at break, YM is Young's Modulus and WVP is water vapour permeability.

Source	Moisture content		TS		%E		YM		WVP	
	F-value	p-value	F-value	p-value	F-value	p-value	F-value	p-value	F-value	p-value
Model	25.65	0.0023	43.02	0.0007	81.97	0.0121	55.68	0.0037	9.32	0.0144
A	20.23	0.0064	65.84	0.0005	117.55	0.0084	227.43	0.0006	16.03	0.0071
B	19.24	0.0071	6.26	0.0544	9.77	0.0889	5.55	0.0998	2.62	0.1568
AB					5.07	0.1532	0.5199	0.5230		
A ²					130.78	0.0076	44.77	0.0068		
B ²					1.43	0.3538	0.1296	0.7427		

Table 3. Fit statistics of the model for each of the study dependent variable. TS is tensile strength, %E is percentage of elongation at break, YM is Young's Modulus and WVP is water vapour permeability.

	Moisture content	TS	%E	YM	WVP
r^2	0.9112	0.95	0.99	0.99	0.76
Adjusted r^2	0.8757	0.92	0.98	0.97	0.68
Predicted r^2	0.7406	0.88	0.90	0.87	0.49
Adequate precision	13.5057	16.14	23.54	17.44	7.95

Table 4. Optical properties of the developed films. The average percentage of transmittance in the region UV-A (315–400 nm), UV-B (280–315 nm) and UV-C (200–280 nm), transparency and opacity calculated of the selected samples. %T is percentage of transmittance, T600 is transmittance at 600 nm wavelength, %T600 is the percent transmittance at 600 nm, T500 is transmittance at 500 nm and Abs500 is absorbance at 500 nm.

Exp.	%T UV-A	%T UV-B	%T UV-C	T600	%T600	T500	Abs500	Transparency	Opacity
1	6.05	3.30	1.00	0.10	9.72	0.09	1.06	47.02	50.25
3	19.12	10.85	3.17	0.28	27.75	0.26	0.59	23.04	9.42
7	5.59	2.40	0.57	0.11	11.05	0.10	1.01	41.74	40.53