Potential of Biodegradable Polyhydroxyalkanoates for the Construction of Sustainable Polymer Composite Materials

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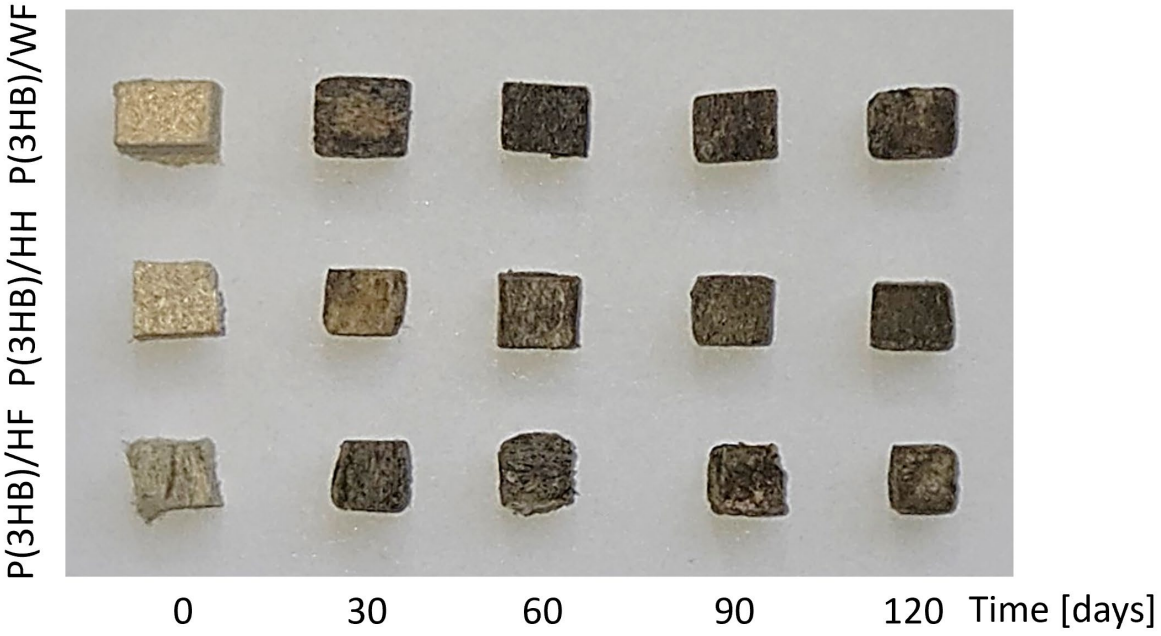


Figure S1. Photo of 50/50 composites incubated in a laboratory soil microecosystem.

Table S1. Contact angle of the composite surface.

Samples, Component Ratio	Water Contact Angle [°]						
	0 s	0.5 s	1 s	2 s	5 s	10 s	Average
P(3HB)	91.1 ± 4.5	81.1 ± 3.2	77.8 ± 3.4	74.4 ± 0.8	73.8 ± 1.9	71.1 ± 1.7	78.2 ± 2.3[a*]
			P(3HB)/WF				
70/30	101.7 ± 2.9	99.2 ± 2.5	98.8 ± 3.1	96.8 ± 2.4	95.1 ± 1.7	92.9 ± 1.2	97.4 ± 2.3[b]
50/50	99.1 ± 2.5	97.1 ± 3.3	95.7 ± 2.1	93.3 ± 3.4	87.3 ± 2.5	83.6 ± 1.6	92.7 ± 2.6[c]
30/70	97.4 ± 3.4	95.6 ± 2.6	93.5 ± 2.2	91.2 ± 2.1	88.5 ± 1.4	85.6 ± 2.9	91.9 ± 2.4[c]
			P(3HB)/HH				
70/30	90.2 ± 3.7	86.3 ± 5.5	83.9 ± 3.2	81.8 ± 2.8	80.7 ± 1.5	80.1 ± 1.4	83.9 ± 2.9[d]
50/50	83.6 ± 3.4	77.9 ± 4.7	76.3 ± 3.3	75.5 ± 2.1	73.1 ± 0.8	72.7 ± 1.7	76.5 ± 2.7[a]
30/70	79.3 ± 5.6	76.5 ± 2.9	75.9 ± 2.1	75.2 ± 4.5	74.5 ± 3.8	73.1 ± 0.7	75.7 ± 3.3[a]
			P(3HB)/HF				
70/30	87.5 ± 3.6	82.9 ± 3.7	82.1 ± 1.3	80.5 ± 1.2	78.1 ± 0.9	77.5 ± 1.1	81.4 ± 1.9[ad]
50/50	81.8 ± 2.5	78.1 ± 1.4	77.2 ± 3.4	76.3 ± 1.7	72.1 ± 2.2	71.1 ± 2.4	76.1 ± 2.3[a]
30/70	77.7 ± 5.5	70.2 ± 6.5	68.4 ± 4.4	67.5 ± 2.8	65.8 ± 1.6	65.7 ± 3.2	69.2 ± 3.9[e]

* Identical letters indicate the absence of significant differences when comparing groups using the Mann-Whitney test at $p < 0.05$.

Table S2. Two-way analysis of variance of the results of microbial adhesion on the surface of composites made from different types of fillers.

Source of Variation	SS	df	MS	F	*p*-Value	F Critical
Species of bacteria	1683.74	1	1683.74	395.36	1.49E-10	4.75
Filler type	226.32	2	113.16	26.57	3.91E-05	3.89
Interaction of factors	1381.97	2	690.98	162.25	2.06E-09	3.89

Table S3. Two-way analysis of variance of the results of the influence of the type and amount of filler on the studied characteristics of composites.

Source of Variation	SS	df	MS	F	*p*-Value	F Critical
Water contact angle						
Filler type	1781.25	2	890.62	116.99	4.84E-11	3.55
Amount of filler	314.93	2	157.46	20.69	2.16E-05	3.55
Interaction of factors	50.67	4	12.67	1.66	0.21	2.93
Water absorption						
Filler type	67.61	2	33.81	25.58	5.49E-06	3.55
Amount of filler	4595.85	2	2297.92	1738.57	2.55E-21	3.55
Interaction of factors	74.67	4	18.67	14.12	2.2E-05	2.93
Thickness swell						
Filler type	139.49	2	69.74	43.1	1.37E-07	3.55
Amount of filler	5244.49	2	2622.24	1620.59	4.78E-21	3.55
Interaction of factors	60.51	4	15.13	9.35	0.0003	2.93
Young's modulus						
Filler type	741560.9	2	370780.5	34.22	7.37E-07	3.55
Amount of filler	1448108	2	724053.8	66.82	4.68E-09	3.55
Interaction of factors	989360.8	4	247340.2	22.82	7.59E-07	2.93
Fracture strength						
Filler type	712.86	2	356.43	33.02	9.49E-07	3.55
Amount of filler	140.79	2	70.39	6.52	0.01	3.55
Interaction of factors	259.93	4	64.98	6.02	0.003	2.93
Degradation						
Filler type	4419.79	2	2209.89	224.51	1.88E-13	3.55
Amount of filler	2379.11	2	1189.55	120.85	3.69E-11	3.55
Interaction of factors	901.95	4	225.49	22.91	7.39E-07	2.93