

Supplementary Materials: The following are available online at www.mdpi.com/1422-0067/222/21/2267/s1.

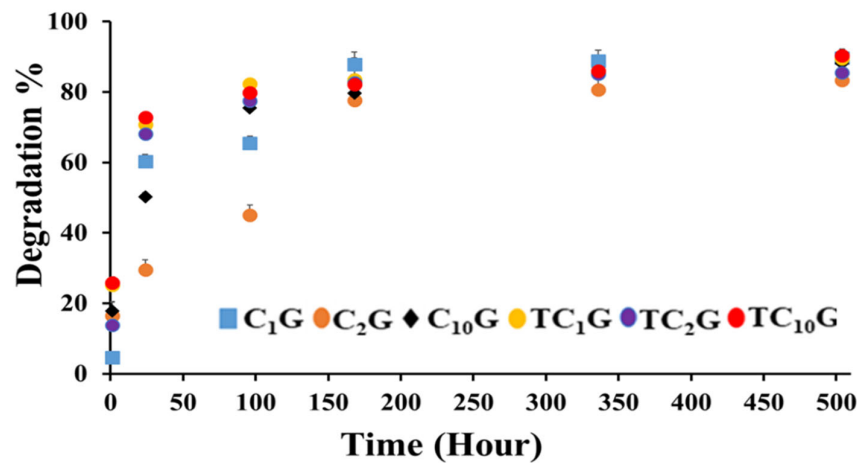


Figure S1: Degradation percentages for the different types of hydrogels after 504 hours showing the slowest degradation rate in C₂G and TC₂G.

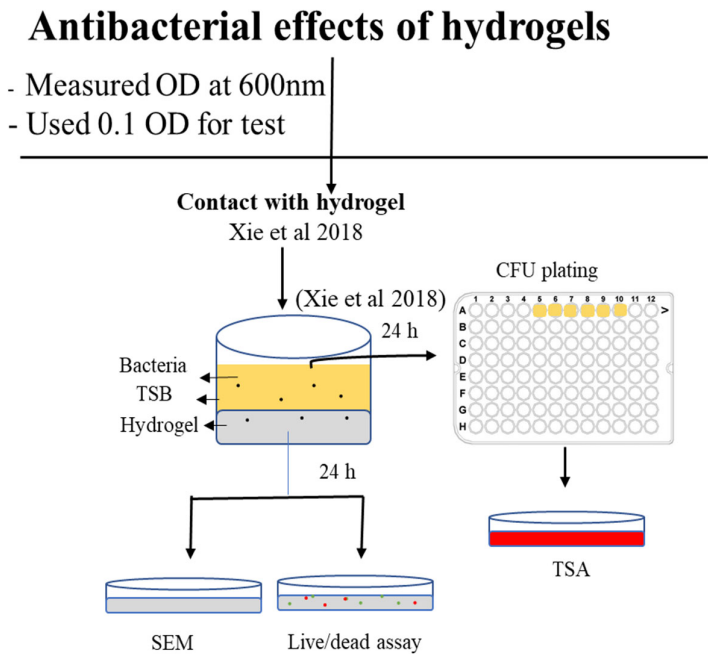


Figure S2: Schematic showing the assays used to evaluate the antibacterial activity of hydrogels. CFU: colony-forming unite, TSB: Tryptic soy broth, TSA: tryptone soya agar, SEM: scanning electron microscope.

Table S1. Silica release from the different types of hydrogels at 0.5, 1, 7, 24, 96, 168, 336, 504 hours. Significant differences were identified through one-way ANOVAs and post-hoc Tukey comparisons ($p < 0.05$). Lower case letters represent the post-hoc Tukey comparisons at each time (across the rows) where the significantly highest to lowest release is represented in ascending alphabetical order.

Hydrogels Time (hour)	C2G BPS	C ₂ G E	TC ₂ G PBS	TC ₂ G E
0.5	0.88±0.1 ^{bc}	3.04±0.39 ^a	0.77±0.17 ^c	0.97±0.18 ^b
1	0.869±0.09 ^b	1.29±0.54 ^a	0.55±0.13 ^c	0.76±0.08 ^b
7	5.0±0.26 ^b	7.84±0.2 ^a	2.83±0.35 ^d	1.94±0.24 ^c
24	3.05±0.37 ^a	1.11±0.17 ^c	2.46±0.62 ^b	2.69±0.26 ^b
96	0.79±0.05 ^d	1.55±0.08 ^c	2.04±0.08 ^a	1.87±0.06 ^b
168	1.11±0.9 ^d	1.31±0.21 ^b	1.28±0.013 ^c	1.41±0.1 ^a
336	1.42±0.1 ^d	1.96±0.1 ^b	1.67±0.01 ^c	2.08±0.12 ^a
504	0.95±0.10 ^d	1.58±0.25 ^b	1.18±0.06 ^c	1.70±0.14 ^a

Table S2: Glycerol release from the different types of hydrogels at 0.5, 1, 7, 24, 96, 168, 336, 360, 504 hours. Significant differences were identified through one-way ANOVAs and post-hoc Tukey comparisons ($p < 0.05$). Lower case letters represent the post-hoc Tukey comparisons at each time (across the rows) where the significantly highest to lowest release is represented in ascending alphabetical order.

Hydrogels Time (hour)	C2G BPS	C2G E	TC2G PBS	TC2G E
0.5	217.45 \pm 37 ^b	248.53 \pm 30 ^a	169.78 \pm 31 ^c	172.53 \pm 32 ^c
1	166.4 \pm 28 ^b	169.35 \pm 39 ^a	162.15 \pm 29 ^c	162.65 \pm 25 ^c
7	136.25 \pm 31 ^a	136.83 \pm 10 ^a	100.15 \pm 16 ^c	121.5 \pm 21 ^b
24	80.33 \pm 19 ^a	80.7 \pm 17 ^a	79.33 \pm 9 ^a	79.55 \pm 11 ^a
96	227.03 \pm 40 ^a	228.68 \pm 44 ^a	221.4 \pm 45 ^d	225.05 \pm 45 ^b
168	197.48 \pm 20 ^b	198.53 \pm 31 ^a	193.08 \pm 23 ^d	195.75 \pm 41
336	140.4 \pm 35 ^b	146.9 \pm 29 ^a	124.95 \pm 36 ^d	134.73 \pm 23 ^c
360	4.38 \pm 1 ^b	4.975 \pm 0.5 ^a	2.875 \pm 0.4 ^d	3.975 \pm 0.8 ^c
504	0	0	0	0

Table S3: Chitosan monomers release from the different types of hydrogels at 0.5, 1, 7, 24, 96, 168, 504 hours. Significant differences were identified through one-way ANOVAs and post-hoc Tukey comparisons ($p < 0.05$). Lower case letters represent the post-hoc Tukey comparisons at each time (across the rows) where the significantly highest to lowest release is represented in ascending alphabetical order.

Hydrogels Time (HOUR)	C2G BPS	C2G E	TC2G PBS	TC2G E
0.5	2.62±0.43 ^b	3±0.2 ^a	1.83±0.1 ^d	1.97±0.37 ^c
1	1.20±0.1 ^b	1.31±0.13 ^a	0.78±0.14 ^d	1.04±0.12 ^c
7	0.66±0.13 ^{ab}	0.69±0.13 ^a	0.62±0.06 ^c	0.63±0.03 ^{bc}
24	0.57±0.14 ^a	0.58±0.13 ^a	0.46±0.41 ^b	0.49±0.01 ^b
96	1.14±0.12 ^{ab}	1.17±0.24 ^a	1.03±0.7 ^b	1.12±0.17 ^{ab}
168	0.64±0.13 ^{ab}	0.65±0.13 ^a	0.6±0.09 ^b	0.61±0.01 ^{bc}
336	1.09±0.13 ^a	1.19±0.12 ^a	1.06±0.11 ^a	1.12±0.15 ^a
504	0.81±0.1 ^{ab}	0.86±0.11 ^a	0.77±0.07 ^b	0.79±0.03 ^b

Table S4: Effect of the different hydrogels on metabolic activity of osteoblasts at 24, 48, 72 and 168 hours. Significant differences were identified through one-way ANOVAs and post-hoc Tukey comparisons ($p < 0.05$). Lower case letters represent the post-hoc Tukey comparisons at each time (across the rows) where the significantly highest to lowest release is represented in ascending alphabetical order.

Hydrogels Time (HOUR)	C ₁ G	C ₂ G	C ₁₀ G	TC ₁ G	TC ₂ G	TC ₁₀ G
24	49.01±2.9 ^a	48.09±1.8 ^a	49.15±9.5 ^a	51.33±5.9 ^a	51.89±4.06 ^a	51.58±3.5 ^a
48	42.10±7.0 ^b	59.58±6.1 ^{ab}	59.68±10.4 ^{ab}	66.41±12.3 ^{ab}	63.48±10.3 ^{ab}	68.88±5.6 ^a
72	57.35±3.1 ^{ab}	68.01±1.8 ^a	52.41±11.4 ^b	69.54±7.5 ^a	64.09±6.4 ^{ab}	71.49±3.7 ^a
168	61.69±3.3 ^b	71.93±8.3 ^{ab}	65.37±10.8 ^{ab}	79.43±8.9 ^a	79.59±2.8 ^{ab}	77.18±8 ^{ab}