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Supporting Information

Tough and VEGF-releasing scaffolds composed of artificial silk fibroin mats and natural acellular matrix

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Supporting Information

Supplementary Data Available

SI. 1 The method for preparation of BAMG

The method to prepare BAMG has already been described. First, the porcine bladder tissues were rinsed with PBS and then manually scraped off the muscular and serosal layers. After that, the isolated submucosa tissue was treated with 0.1% (v/v) ammonium hydroxide and 0.5% (v/v) Triton X100 (Sigma) and stirred 3 d to induce cell lysis. Then the matrix remained was repeatedly washed with deionized water and stored in 0.9% saline at 4 °C. Meanwhile, the matrix was stretched smoothly on aluminum foil and lyophilized using freezing dryer (LABCONCO, USA), then stored at room temperature for further use.

Table S1. Mechanical properties of BAMG and post-treated scaffolds in dry and wet states

	Sample code	Breaking strength/MPa	Elongation at break/%	Initial modulus/ MPa	Breaking energy/J·kg^{-1}
Dry state	BAMG	41.1 ± 10.8	19.9 ± 2.2	140.6 ± 63.0	2392.8 ± 727.3
	Ble-Wva	4.4 ± 0.6	2.6 ± 0.8	336.6 ± 53.9	61.2 ± 22.7
	Ble-EI	2.7 ± 0.3	3.5 ± 0.5	88.1 ± 20.2	39.7 ± 7.1
	Coa-Wva	4.3 ± 0.6	2.0 ± 0.4	219.6 ± 72.7	34.5 ± 8.2
	Coa-EI	2.1 ± 0.4	2.0 ± 0.4	140.0 ± 45.7	16.6 ± 4.3
	Ble-Com-Wva	14.4 ± 1.5	12.0 ± 2.0	352.9 ± 99.0	970.8 ± 218.5
	Ble-Com-EI	10.3 ± 1.2	12.5 ± 2.8	182.0 ± 36.8	650.6 ± 163.4
	Coa-Com-Wva	12.9 ± 1.6	10.7 ± 2.3	290.8 ± 118.8	800.4 ± 224.7
	Coa-Com-EI	10.2 ± 1.2	14.0 ± 3.7	159.0 ± 23.3	749.4 ± 185.7
Wet state	Ble-Com-Wva	3.9 ± 1.2	53.7 ± 11.7	4.3 ± 1.4	681.7 ± 160.2
	Ble-Com-EI	2.9 ± 0.2	58.2 ± 9.5	4.1 ± 1.6	541.6 ± 201.0
	Coa-Com-Wva	3.3 ± 1.0	48.2 ± 12.2	3.9 ± 1.6	651.1 ± 56.8
	Coa-Com-EI	2.6 ± 0.7	49.6 ± 8.9	4.7 ± 2.3	458.4 ± 70.3

Supporting Information

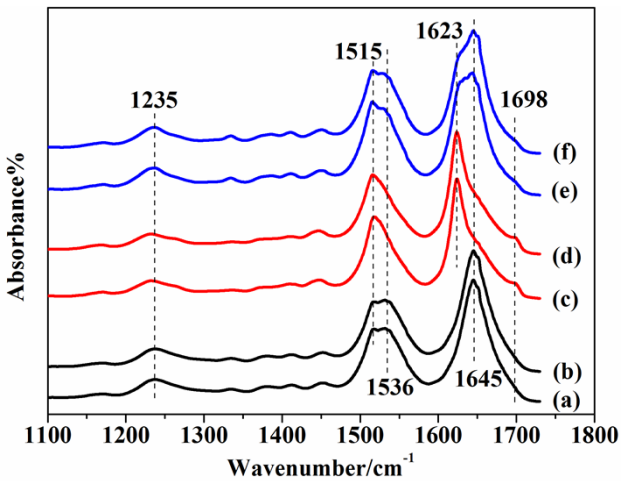

Figure S1. FTIR curves of the RSF scaffolds with different post-treatments: (a) Ble-As, (b) Coa-As, (c) Ble-EI, (d) Coa-EI, (e) Ble-Wva, (f) Coa-Wva.

Table S2. Quantitative analysis of the FTIR in amide I region of RSF scaffolds with different post-treatments

Sample code	Secondary structure (%)		
	β-sheet	α-helix/random coil	β-turn
Ble-As	18.8	68.8	12.4
Coa-As	17.6	69.4	13.0
Ble-EI	32.4	55.6	12.0
Coa-EI	31.6	55.8	12.6
Ble-Wva	36.4	52.7	10.9
Coa-Wva	36.6	51.8	11.6

The deconvolution results of the spectra for Amide I were obtained by the method of Pan.[1]

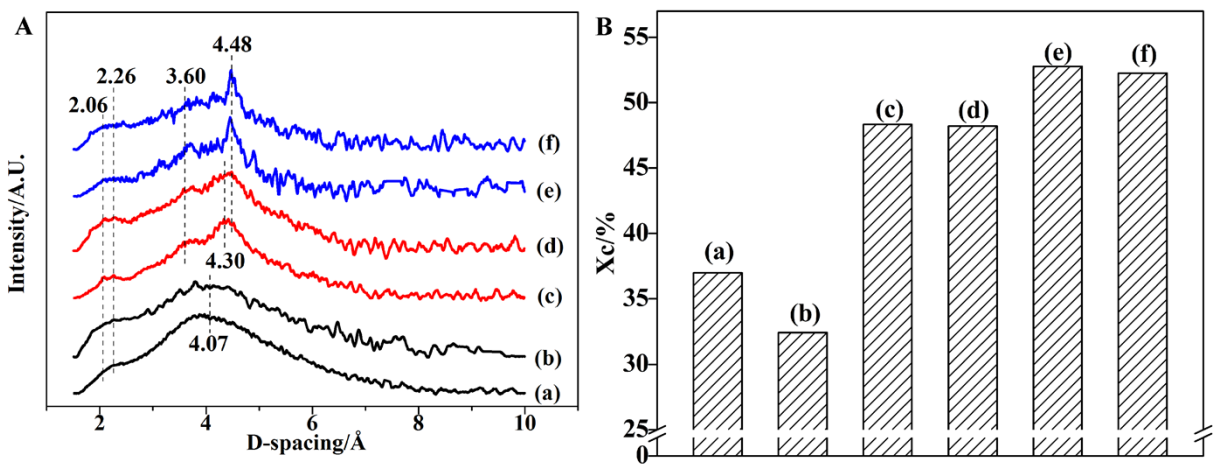

Figure S2. (A) WAXD diffractograms and (B) crystallinity of the RSF scaffolds with different post-treatments: (a) Ble-As, (b) Coa-As, (c) Ble-EI, (d) Coa-EI, (e) Ble-Wva, (f) Coa-Wva. The crystallinity of each sample was analyzed by the method of Seidel and Drummy *et al*.[2, 3]

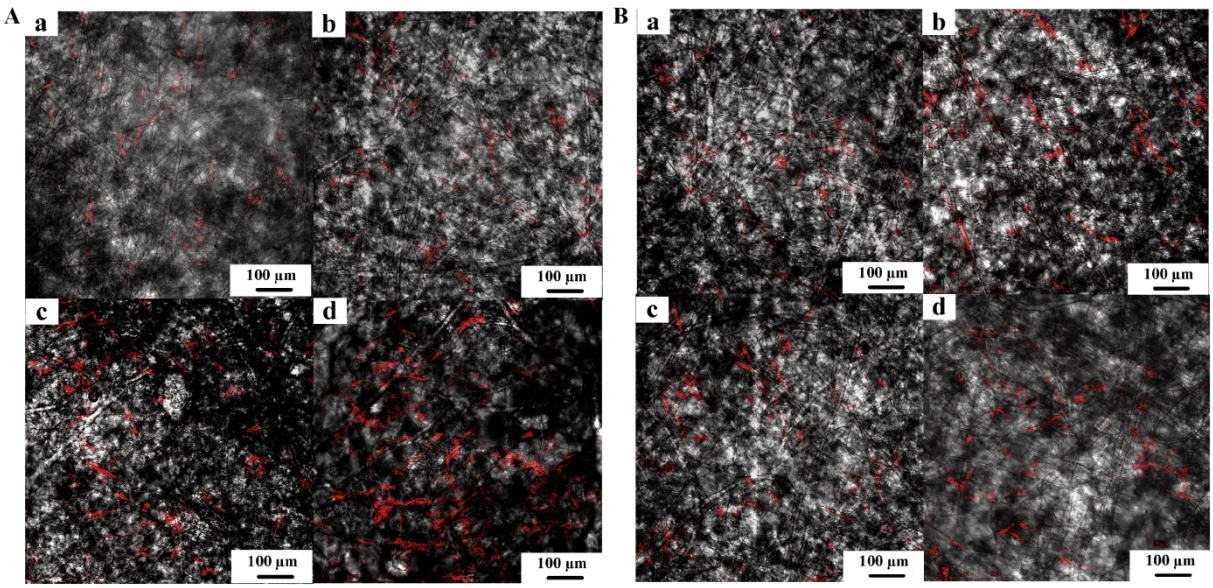

Figure S3. LSCM 2D photographs of Rhodamine labeled PIECs (red) cultured on the scaffolds for 3 days. S3 A are the pictures of the blend electrospun scaffolds with different post-treatments: (a) Ble-EI, (b) Ble-Wav, (c) Ble-EI-VEGF and (d) Ble-Wav-VEGF. S3 B are the coaxially electrospun scaffolds with different post-treatments: (a) Coa-EI, (b) Coa-Wav, (c) Coa-EI-VEGF and (d) Coa-Wav-VEGF.

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