SUPPLEMENTARY MATERIALS

Stepwise Chemical Oxidation of Cellulose to Tricarboxycellulose: Synthesis, Structural Characterization, and Hemostatic Properties

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Table S1

Comparison of the swelling degrees of native cellulose-based materials and their oxidized counterparts obtained through NaClO oxidation

Before oxidation				**After oxidation**			
Swelling time, min	CC, %	WG, %	MC, %	Swelling time, min	OC from CC, %	OC from WG, %	OC from MC, %
2	70±2.1	61±3.0	55±1.7	2	105±2.8	85±3.3	70±2.5
4	78±1.8	68±2.4	60±2.1	4	165±2.5	122±3.1	95±2.2
6	85±3.2	74±1.9	65±3.2	6	215±1.9	175±2.8	127±1.9
8	92±2.5	81±2.7	70±1.5	8	245±2.2	197±3.0	140±2.3
10	100±2.0	89±3.2	77±3.0	10	275±3.0	220±1.9	161±2.7
12	105±3.5	95±2.2	82±2.5	12	305±2.4	244±2.5	185±3.1
14	113±2.4	99±1.8	88±1.2	14	335±1.7	258±2.3	200±3.5
16	120±1.5	102±2.5	92±1.8	16	355±2.0	270±2.7	222±3.3
18	127±2.2	105±3.5	96±2.7	18	365±3.1	285±3.2	242±2.8
20	**130±1.7**	**111±2.2**	**100±3.5**	**20**	**380±3.3**	**300±3.0**	**250±2.5**
22	131±3.2	112±1.8	101±2.2	22	360±2.7	270±2.6	235±2.3
24	131±3.2	112±1.8	101±2.2	24	350±2.3	265±2.9	230±2.7
26	131±3.2	112±1.8	101±2.2	26	345±2.5	260±2.4	226±3.0
28	131±3.2	112±1.8	101±2.2	28	330±2.6	255±2.8	220±2.8
30	131±3.2	112±1.8	101±2.2	30	325±2.8	255±3.3	215±2.5

Table S2

Effect of time on the swelling degree of C6-carboxy-C2,C3-dialdehyde cellulose obtained from cotton cellulose, woven gauze, and medical cotton through sequential NaClO-$NaIO_4$ oxidation

Swelling time, min	DAC from CC, %	DAC from WG, %	DAC from MC. %
2	90±3.5	65±3.0	50±3.3
4	135±2.8	95±1.8	75±2.8
6	175±3.2	120±2.0	100±2.5
8	195±2.0	145±1.5	115±2.0
10	215±3.0	160±1.9	130±3.1
12	240±2.5	185±2.1	145±2.7
14	265±2.7	200±2.5	160±2.3
16	280±1.9	215±2.2	175±3.1
18	295±1.5	225±1.9	185±3.5
20	**310±3.0**	**240±2.7**	**200±3.2**
22	285±2.5	220±2.5	180±3.0
24	280±2.3	215±2.2	175±2.7
26	275±2.2	210±2.0	165±2.5
28	270±1.8	205±1.9	160±2.2
30	265±1.5	200±1.7	155±1.8

Table S3

Effect of time on the swelling degree of tricarboxycelluloses derived from cotton cellulose, woven gauze, and medical cotton, compared with commercial SURGICEL® Powder

Swelling time, min	TCC from CC, %	TCC from WG, %	TCC from MC, %	SURGICEL® Powder, %
2	180±3.6	145±2.9	120±2.4	105±3.15
4	320±6.4	270±5.4	210±4.2	122±3.66
6	430±8.6	352±7.0	281±5.6	145±4.35
8	520±10.4	430±8.6	340±6.8	170±5.10
10	600±12.0	504±10.1	396±7.9	190±5.70
12	650±13.0	550±11.0	435±8.7	215±6.45
14	700±14.0	588±11.7	467±9.3	240±7.20
16	755±15.0	625±12.5	494±9.9	265±7.95
18	780±15.6	653±13.0	515±10.3	305±9.15
20	**830±16.6**	**670±13.4**	**530±10.6**	**330±9.90**
22	660±14.4	520±11.4	409±9.0	320±9.60
24	620±13.0	500±10.0	385±7.7	315±9.43
26	590±12.0	475±9.5	370±7.4	310±9.30
28	570±11.4	461±9.2	359±7.2	305±9.15
30	550±10.4	450±9.0	351±7.0	300±9.01