

Contact/Release Coordinated Antibacterial Cotton Fabrics Coated with N-Halamine and Cationic Antibacterial Agent for Durable Kill Bacteria Application

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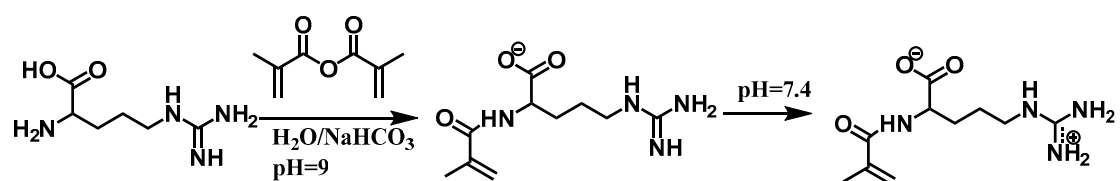


Figure S1. Synthesis of acrylic anhydride modified arginine M-Arg.

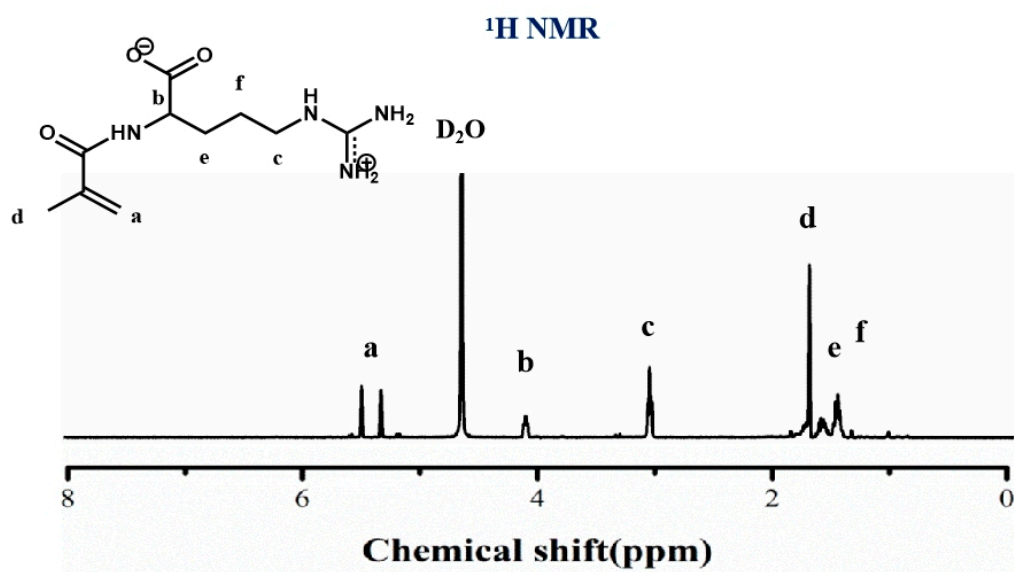


Figure S2. The ¹H NMR spectra of M-Arg. The peaks of carbon-carbon double bond appeared at 5.25 and 5.48 ppm (a, CH₂=).

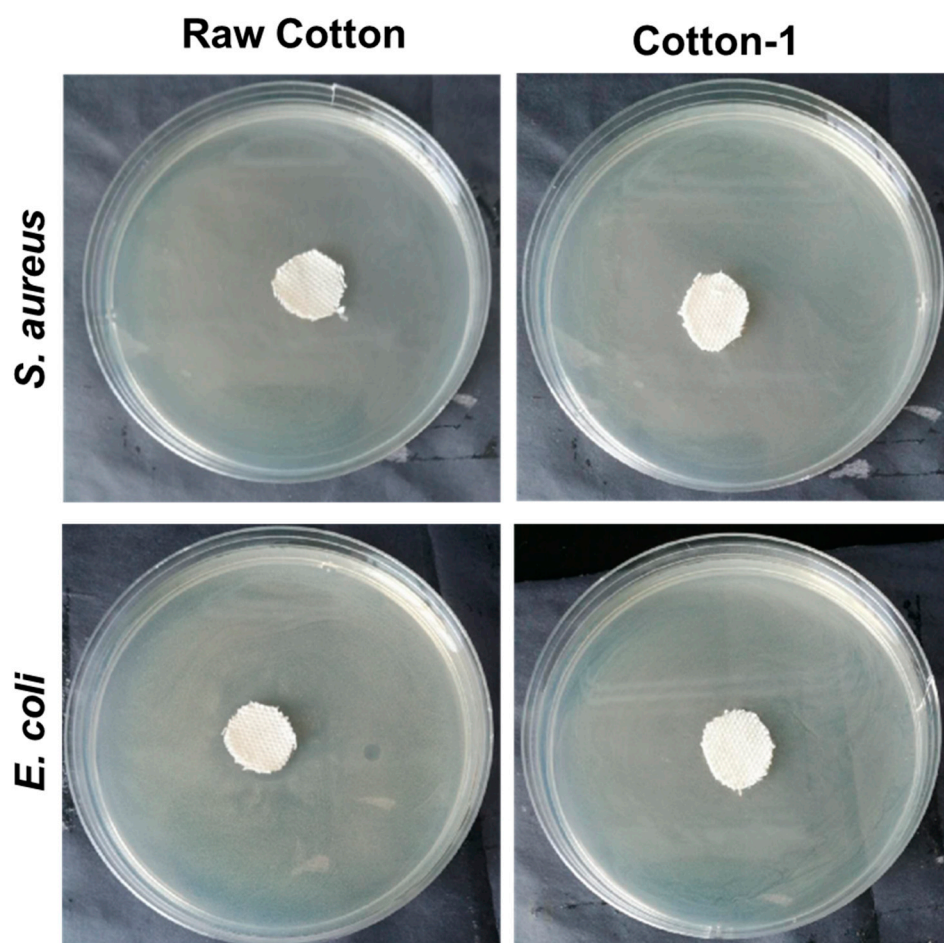


Figure S3. The test of inhibition zone of raw cotton and cotton-1 fabrics. There was no inhibition zone appear around the raw cotton and cotton-1 fabrics treated with only dimethyl dodecyl [3-(trimethoxysilyl) propyl] ammonium chloride (CDDA), which indicating no antibacterial agent release from the cotton fabrics.

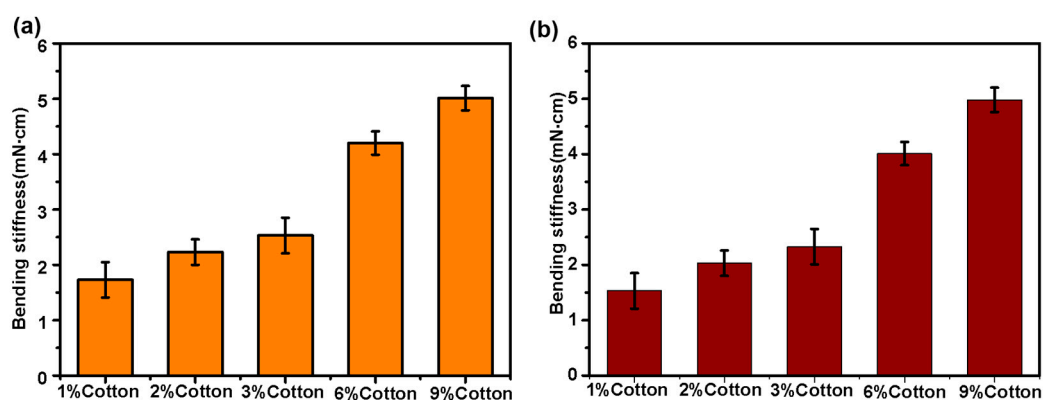


Figure S4. The bending stiffness of cotton fabrics coated with CCDA after washing (a) 50 and (b) 100 cycles in water.

Table S1. The determination of Cl^+ content on cotton fabrics at different washing cycles in anionic detergent water solution.

Washing cycles	The content of Cl^+ (%)				
	Raw Cotton	Cotton-1	Cotton-2	Cotton-3	Cotton-4
0	-	-	0.150	0.210	0.340
10	-	-	0.110	0.130	0.210
20	-	-	0.098	0.11	1.21

30	-	-	0.049	0.056	0.084
40	-	-	0.038	0.046	0.053
50	-	-	0.010	0.060	0.090

Table S2. The determination of Cl^+ content on cotton fabrics treated with different concentration CCDA at different washing cycles in anionic detergent water solution.

Washing cycles	The content of Cl^+ (%)				
	1% Cotton	2%Cotton-1	3%Cotton-2	6%Cotton-3	9%Cotton
0	-	-	-	-	-
10	-	-	-	-	-
20	-	-	-	-	-
30	-	-	-	-	-
40	-	-	-	-	-
50	-	-	-	-	-

Note: All the cotton fabrics can not caused titration indicator color change, which indicates that there is no Cl^+ on the cotton fabrics.

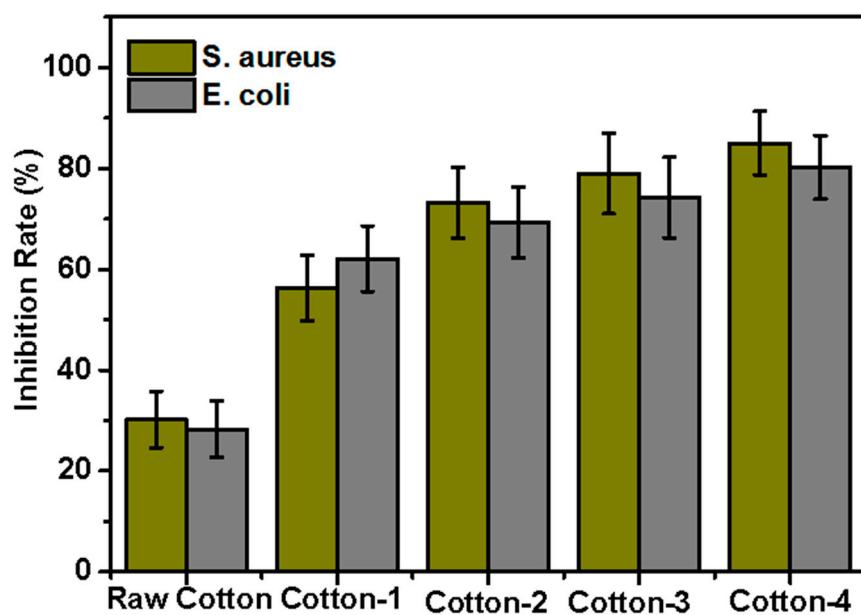


Figure S5. The inhibition rate of cotton fabrics after washing 100 times with anionic detergent in water.

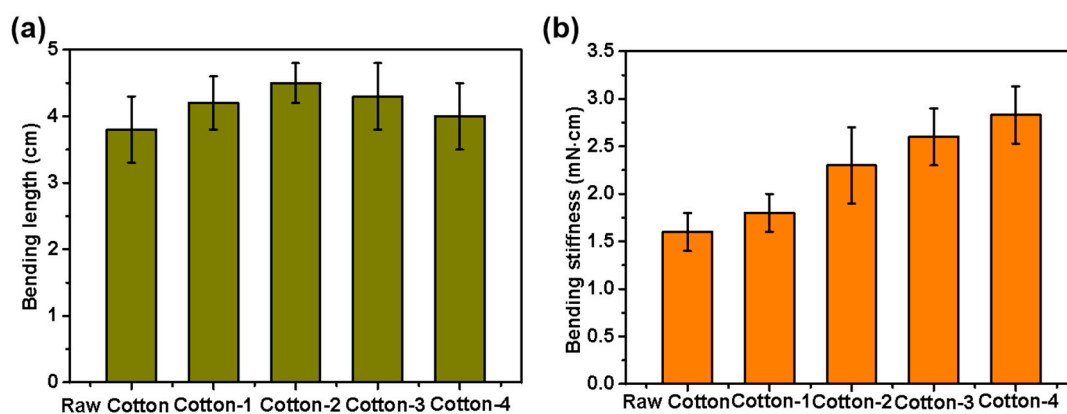


Figure S6. Bending length (b) and bending stiffness (c) in softness test of cotton fabrics after washing with anionic detergent in water.

