

Supporting Information for
Lignin-Based Sustainable Antifungal Gel Nanocoatings for
Disinfecting Biomedical Devices

Sanjam Chandna,^{a,b,§} Kunal Gogde,^{a,c} Shatabdi Paul^{a,d,#} and Jayeeta Bhaumik^{a,*}

^aCenter of Innovative and Applied Bioprocessing (CIAB), Department of Biotechnology
(DBT), Government of India, Sector 81 (Knowledge City), S.A.S. Nagar 140306, Punjab,
India

^bDepartment of Microbial Biotechnology, Panjab University, South Campus, Sector 25,
Chandigarh 160036, India

^cUniversity Institute of Pharmaceutical Sciences, Panjab University, Sector 14,
Chandigarh 160014, India

^dRegional Centre of Biotechnology, Faridabad 121001, Haryana, India

*Corresponding author's email jayeeta@ciab.res.in, jbhaumi@gmail.com

§Present Address: Institute of Chemistry and Biochemistry, Freie Universität Berlin,
14195 Berlin, Germany

#Present Address: Department of Pharmaceutical Technology (Process Chemistry), National Institute
of Pharmaceutical Education and Research, S.A.S. nagar 160062, Punjab, India

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Instrumentation and Methods.

The UV-Vis spectra were recorded on Shimadzu UV-2600. FT-IR analysis was done on an FT-IR spectrophotometer with ATR analysis (Agilent; Cary 600 series). The rheology of gel coating was performed using a Discovery HR-2 hybrid rheometer (TA instruments). Fluorescence microscopy was done using inverted fluorescence microscopy (Nikon; TS2FL). The size and zeta potential of nanoconjugates were measured by zeta sizer (Malvern; Nano 25) at CIAB Mohali.

Materials and Chemicals.

Alkali lignin, silver nitrate, 1-ethyl-3-(3-dimethylaminopropyl) carbodiimide (EDC), polyacrylic acid (PAA), polyvinyl alcohol (PVA), rose Bengal, potassium persulphate, 1,3-diphenylisobenzofuran (DPBF), DAPI and propidium iodide (PI) were purchased from Sigma Aldrich. N-(2-hydroxyethyl) piperazine-N'-(2-ethanesulfonic acid) (HEPES), phosphate buffered saline (PBS), Luria Bertani broth, agar, agarose, malt extract, glucose, yeast extract, and peptone extract were procured from HiMedia Laboratories Pvt. Ltd. Sodium hydroxide was purchased from Central Drug House Pvt. Ltd. All the stock solutions were prepared in deionized water (collected from Merck Millipore system present in CIAB. The yeast strain *Candida tropicalis* (MTCC 6192) and bacterial strain *E. coli* (BL21) were procured from microbial type cell culture (MTCC), CSIR-IMTECH, Chandigarh (India).

Table S1. Elemental Analysis of bare lignin and lignin gel coating

Sample	%C	%H	%N	%S
Bare lignin	57.9	15.6	1.5	2.7
Lignin Gel Coating	52.5	12.3	0.94	2.5

Table S2. Antimicrobial Photodynamic Therapeutic Efficacy of the Photodynamic Lignin-based Nanocoatings

Samples	Percentage survival (<i>C. tropicalis</i>) in dark conditions	Percentage survival (<i>C. tropicalis</i>) in light conditions
Control	100.00 ± 0.00	97.00 ± 7.02
Lignin gel coating	93.01 ± 7.010	88.02 ± 8.30
RB	99.05 ± 9.34	74.60 ± 2.23
Lig-coat-RB	91.00 ± 6.10	69 ± 6.82
AgLNCs	56.80 ± 6.89	49.89 ± 2.19
Lig_coat-AgLNCs	51.00 ± 9.59	43.91 ± 4.10
RB@AgLNCs	53.45 ± 7.4	15.84 ± 2.21
Lig-coat-RB@AgLNCs	42.67 ± 3.65	8.54 ± 0.93