



NANOCRYSTALLINE CELLULOSE FOR PREVENTION OF BACTERIAL ADHESION

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HIGHLIGHTS

- Biofilm prevention agent
- Tested against gram positive and gram negative bacteria

OPPORTUNITY

University of Alberta researchers have developed a hydrogel formulation incorporating nanocrystalline cellulose (NCC) polymer with demonstrated ability to prevent biofilm formation via physical resistance. Data from testing in urinary catheter tubing has shown that the formulation is 99% effective at reducing initial bacterial adhesion (by depletion of colonization-induced bacterial flocculation) and subsequent biofilm formation on various surfaces.

It is anticipated that the hydrogel can be incorporated into current coating methods or that NCC may be integrated directly into tubing requiring very little change to existing manufacturing processes.

Given that 80% of microbial infections in the body are caused by biofilms, preventing biofilm-formation via medical devices provides an effective strategy for prevention of bacterial infection. Urinary catheters are placed on 15-25% of hospitalized patients and result in more than 560,000 catheter-associated urinary tract infections (CAUTI) in the US. Annual estimated CAUTI costs are as high as \$1.8 billion.

COMPETITIVE ADVANTAGE

- NCC is an investigative product that is likely to be non-toxic and biocompatible.
- No risk of increasing antibiotic resistance - NCC is not an antibiotic.

ADDITIONAL INFORMATION

- [Chem Eng J Vol 198-199, 1 Aug 2012, P. 476-481](#)
- [Soft Matter, 2014, 10, 8923-8931](#)
- [Colloids and Surfaces B: Biointerfaces Vol 136, 1 Dec 2015, P. 570-576](#)
- [ACS Appl. Bio Mater. 2021, 4, 2, 1413-1423](#)
- US patent [9,744,270](#)

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MORE INFORMATION

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