

## Modified polysaccharides for use as antimicrobial agents

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### Technology

Although much research activity on the development of antimicrobial packaging systems is underway, only a few commercial antimicrobial packaging products are found in the market today. The antimicrobial packaging market was valued at \$8.6B in 2019 and is expected to reach \$12.4B by 2025, at a CAGR of 5.89% over the forecast period 2020 - 2025. The antimicrobial packaging market is growing rapidly in accordance with the increase in demand by different industries, as a solution for perishable, preservative-free products, as well as maintaining clean and sterile products, and supplying greater shelf life.

Prof. Joseph Kosta's invention provides a novel methodology to generate antimicrobial surfaces using modified polysaccharides. The polysaccharides, selected from starch, amylose, amylopectin or dextrin, are substituted with one or more amine and/or ammonium groups. The amine groups may be derived from primary, secondary or tertiary amines comprising aliphatic, carbocyclic, aromatic and/or heterocyclic groups and having one to four amine functions. Specifically, on current invention the methodologies for preparation of quaternized starch and dextrin, preparation of films composed of low-density polyethylene (LDPE) modified with Q-Potato starch and other Q-Polysaccharides and the preparation of antimicrobial nonwoven fabrics, are described. The antibacterial activity of the films and fabrics was demonstrated on gram-positive and gram-negative bacteria, *L. innocua* and *E. Coli* respectively. The combination of highly effective antimicrobial activity, easy production, and predictable safe product provides a unique platform for producing antimicrobial surfaces and fabrics.

### Advantages

- Safe and easy to produce
- Methodology to produce highly effective antimicrobial surfaces and fabrics.

### Applications

- Various applications in food, medical devices, health care and personal care industries.

### Patent

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