

## Accepted Manuscript

Title: Application of carboxymethylcellulose hydrogel based silver nanocomposites on cotton fabrics for antibacterial property.

Author: Ebru Bozaci Emine Akar Esen Ozdogan Asli Demir Aylin Altinisik Yoldas Seki



PII: S0144-8617(15)00665-7  
DOI: <http://dx.doi.org/doi:10.1016/j.carbpol.2015.07.036>  
Reference: CARP 10138

To appear in:

Received date: 29-1-2015  
Revised date: 25-5-2015  
Accepted date: 11-7-2015

Please cite this article as: Bozaci, Ebru., Akar, Emine., Ozdogan, Esen., Demir, Asli., Altinisik, Aylin., & Seki, Yoldas., Application of carboxymethylcellulose hydrogel based silver nanocomposites on cotton fabrics for antibacterial property. *Carbohydrate Polymers* <http://dx.doi.org/10.1016/j.carbpol.2015.07.036>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Application of carboxymethylcellulose hydrogel based silver nanocomposites on cotton fabrics for antibacterial property.**

<sup>1</sup>Ebru Bozaci, <sup>2</sup>Emine Akar, <sup>1</sup>Esen Ozdogan\*, <sup>1</sup>Asli Demir, <sup>3</sup>Aylin Altinisik, <sup>3</sup>Yoldas Seki

<sup>1</sup>Department of Textile Engineering, Ege University, 35100 Bornova, Izmir, Turkey

<sup>2</sup>Çanakkale Onsekiz Mart University, Bioengineering Department, Çanakkale, Turkey,

<sup>3</sup>Department of Chemistry, Dokuz Eylül University, 35160 Buca, Izmir, Turkey

\*Corresponding Author: esen.ozdogan@ege.edu.tr; 00902Highlights ☐

323422797

Highlights

- Preparation and characterization of novel carboxymethylcellulose hydrogel based silver nanocomposites.
- Usage of carboxymethylcellulose hydrogel/silver nanocomposite that should be used the antimicrobial textiles.
- The cotton fabrics treated with CMCF/Ag nanocomposite may be used for medical purposes.

Abstract

In this study, Fumaric acid (FA) crosslinked carboxymethylcellulose (CMC) hydrogel (CMCF) based silver nanocomposites were coated on cotton fabric for antibacterial property for the first time. The performance of the nanocomposite treated cotton fabric was tested for different mixing times of hydrogel solution, padding times and concentrations of silver. The cotton fabrics treated with CMC hydrogel based silver nanocomposites demonstrated 99.9% reduction for both *Staphylococcus aureus*(Sa) and *Klebsiella pneumonia*(Kp). After ten cycle washing processes of treated cotton fabric, there is no significant variation observed in antibacterial activity. From SEM and AFM analyses, silver particles in nano-size,

Download English Version:

<https://daneshyari.com/en/article/7786894>

Download Persian Version:

<https://daneshyari.com/article/7786894>

[Daneshyari.com](https://daneshyari.com)