

The Effect of Solution pH of Chitosan on Antimicrobial Properties of Nylon 6,6 Fabrics

Authors : Nilüfer Yıldız Varan

Abstract : The antimicrobial activities of chitosan against various bacteria and fungi are well known, and the antimicrobial activity of chitosan depends on pH. This study investigates the antimicrobial activity at different pH levels. Nylon 6,6 fabrics were treated with different chitosan solutions. Additionally, samples were treated also in basic conditions to see the antimicrobial activities. AATCC Test Method 100 was followed to evaluate the antimicrobial activity using *Staphylococcus aureus* ATCC 6538 test inoculum. The pH of the chitosan solutions was controlled below 6.5 since chitosan shows its antimicrobial activity only in acidic conditions because of its poor solubility above 6.5. In basic conditions, the samples did not show any antimicrobial activity. It appears from SEM images that the bonded chitosan in the structures exists. In acidic media (pH < 6.5), all samples showed antimicrobial activity. No correlation was found between pH levels and antimicrobial activity in acidic media.

Keywords : chitosan, nylon 6,6, crosslinking, pH stability, antimicrobial

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