

## Comparative evaluation of antimicrobial activity of oligochitosans against *Klebsiella pneumoniae*

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### Abstract

© 2015 Pleiades Publishing, Ltd. The Antibacterial activity of chitosan of different molecular weights was studied against gramnegative *Klebsiella pneumoniae* at different pH values. It was found that the dependence of the inhibitory activity of chitosan on its molecular weight was undergoes inversion when increasing the pH of the medium above 7.0. In acidic media, chitosan of the higher molecular weight had the higher antibacterial activity, while in weak alkaline media, oligomeric forms of chitosan displayed only the inhibition effect. Our results showed that the antibacterial activity of chitosan against *Klebsiella pneumoniae* was closely associated with its polycationic nature, and depended on the degree of protonation of the chitosan amino groups, which, in turn was the function of the degree of polymerization and the pH values of the medium. The results allow one to explain, in part, the contradictory literature data concerning the relationship between the antibacterial activity and molecular weight of chitosan.

<http://dx.doi.org/10.1134/S1068162015010100>

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### Keywords

chitosan, *Klebsiella pneumoniae*, oligochitosan antibacterial activity