

Cinnamon oil: A possible alternative for contact lens disinfection

ABSTRACT

Objective: To investigate the antibacterial activity of cinnamon oil alone and in combination with a multipurpose contact lens disinfectant solution (MPS) as well as tobramycin against multi drug resistant conjunctival bacteria both in planktonic and sessile forms. Methods: Minimum inhibitory concentrations (MIC) of tobramycin and cinnamon oil against 19 bacterial strains were investigated against planktonic and sessile cells by micro-dilution methods. Synergistic effects were determined by well diffusion and micro-dilution tissue culture plate methods for planktonic and sessile cells respectively. Time kill assay was performed to study the bactericidal effect of cinnamon oil in concentrations ranging from 5% to 0.312% combined with an MPS with respect to time. Results: MICs of cinnamon oil against planktonic bacteria ranged from 0.04% to 1.25% versus 0.156% to 5% for sessile cells. Combination of cinnamon oil with tobramycin had a synergistic effect against most tested organisms. The MIC values of cinnamon oil in combination with tobramycin was significantly lower than cinnamon oil alone against biofilm production ($P = 0.004$). Time kill assay revealed that combination of cinnamon oil and disinfectant successfully eradicated the tested microorganisms at all tested concentrations within 2 h contact time except for 0.312% concentration (3 h) versus 24 h for MPS alone. Conclusion: Cinnamon oil has a promising antimicrobial effect. It could be a probable candidate for contact lens disinfection. © 2016 British Contact Lens Association. Published by Elsevier Ltd. All rights reserved.