



TURJOEM

The Turkish Journal of Occupational / Environmental
Medicine and Safety

P91: ANTIMICROBIAL SUSCEPTIBILITY TEST OPTIMIZATION ON SILVER DOPED GLASSES

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Scope: Glasses that are incorporated with antimicrobial agents have gained importance especially for their use in textiles, cosmetics, touch screens, wall and floor coverings, hospital applications, biomaterials etc. Silver is the most widely known active ingredient in antimicrobial agents due to its high activity against a broad range of bacteria and low toxicity. Owing to its potential usage in these applications, it was aimed to investigate antimicrobial properties of glasses doped with silver in the present study.

Method: Bulk and powdered glass samples were prepared using ion exchange process in an ionic medium containing silver nitrate (AgNO₃). Antimicrobial activity of the glass samples were investigated against Escherichia coli and Staphylococcus aureus bacteria using different antibacterial susceptibility tests. Antimicrobial activity of the samples were performed using methods according to Kirby Bauer disk diffusion test, international standard ISO 22196 Plastics - Measurement of antibacterial activity on plastics surfaces and susceptibility test using liquid broth medium.

Results: It is revealed that bulk and powdered glass samples showed significant antimicrobial efficacy (log reduction ≥ 3) against Escherichia coli and Staphylococcus aureus bacteria. Bulk and powdered form of the glass samples and different testing methods caused some differences on test results. As a result, adapted ISO 22196 test for glass surfaces has given more precise and reproducible analytical results compared to other applied methods.

Keywords: Antimicrobial test, glass, silver