
PS-009. Antimicrobial Glass Usage in Medicine and Daily Life

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Due to the risks posed to humans by bacteria, fungi and other pathogenic microorganisms, the demand for materials that guarantee hygiene of human environments has been increasing. This need is more prevalent in homes and in health facilities where such microorganisms are more actively controlled. In the last decade, the use of glassware and display screens in applications such as cellular phones and touch panels of medical devices, has risen significantly, and there have been concerns about the adverse effects of certain bacteria and fungi on the human body. To find a solution, recent works are focused on the development of a new glass-ceramic surface with antibacterial and antifungal performance together with safe biocompatibility, non-cytotoxicity and non-irritation. E. Mendes et al studied on a fungicidal material produced by the incorporation of a silver ionic specimen through ionic exchange reactions into powdered glass with different concentrations of AgNO₃ and showed the antifungal effect on *Candida albicans*. Gyu-In Shim et al investigated the antimicrobial, cytotoxicity and skin irritation behaviors of glass doped with silver ions applied to electronic equipment such as phones and tablet screens. The antimicrobial activity of glass against bacteria was over 99.9% after 24 weeks against *Escherichia coli*, *Staphylococcus aureus*, and *Penicillium funiculosum*. The glass was non-irritant to the skin of experimental animals and was non-cytotoxic. M.F. Santos et al demonstrated that antimicrobial glass particles were nontoxic to human cells, the bactericidal performance against *Staphylococcus aureus* and *Escherichia coli* is excellent Belen Cabal et al demonstrated glass-ceramic powder significantly reduced the number of bacterial cells of *S. aureus*, *S. epidermidis* and *E.coli* by over 96% at 72 h. These findings suggest that antimicrobial glass is more hygienic and can be applied safely to any display screens, dental composites and medical devices.

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