Antifungal Effects of a Tissue Conditioner Coating Agent with TiO2 Photocatalyst

柯恩生
Akiba N;Hayakawa I;Keh E-S;Watanabe A

Abstract

Tissue conditioners are susceptible to colonization by microorganisms. Therefore, the prevention of biofilm formation are important for oral hygiene. However, mechanical and chemical cleaning methods may cause clinical problems such as deformation or surface degradation of tissue conditioners. The objective of this study is to evaluate the antifungal effects of coating agents with a TiO2 photocatalyst. Photocatalytic antifungal effects on C. albicans biofilms and photodegradation effects of adsorbed protein were measured by colorimetric assays. Scanning electron microscopy was used to examine morphological changes in C. albicans. Viscosities of coating agents increased with incorporation of TiO2. However, both of coating agents with TiO2 were acceptable to the application by brush. The antifungal and protein degradation effects increased with the concentration of TiO2 in the coating agents. These effects also increased with radiation time. After 90 min radiation, the viability of C. albicans was reduced to 16.2+/-3.3 %. Scanning electron microscopy observation showed C. albicans remained on the coated surfaces even after 90 min radiation. These results suggest that coating agents with TiO2 photocatalyst can be effective for the maintenance of tissue conditioners when dentures are removed; during sleep