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The Effect of Oral Probiotic Streptococcus Salivarius K12 on Candida Albicans Biofilm Formation

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Introduction: Oral cancer is the sixth most common cancer worldwide with Candida albicans infection being one of the aetiological factors for the disease. Meanwhile, Streptococcus salivarius K12 is an oral probiotic that is beneficial to the oral cavity. The objective of the present study is to determine the effect of S. salivarius K12 on C. albicans biofilm-forming ability with the hypothesis that S. salivarius K12 inhibits biofilm formation of C. albicans **Materials and method:** To assess the effect of S. salivarius K12 on C. albicans biofilm formation, S. salivarius K12, lab strain C. albicans MYA-4901 and clinical isolates from oral cancer, ALC2 and ALC3 were grown in both nutrient broth (NB) and RPMI. In a mono-species biofilm, 10^5 of C. albicans cells and 10^6 of S. salivarius K12 cells were grown separately in a 96-well plate. In contrast, both microorganisms were combined for polymicrobial biofilms with similar cell numbers as in mono-species. The biofilms were incubated for 72 hours at 37°C and the media were replenished every 24 hours. Finally, the crystal violet assay was conducted, and the optical density was measured at OD620nm. **Results:** Polymicrobial biofilms of C. albicans (MYA-4901 and ALC3) with S. salivarius K12 when grown in NB, exhibited a decrease by 64.5 ± 25.8% and 83.7 ± 5.4%, respectively when compared to the expected biofilms which were predominated by yeast form. Furthermore, polymicrobial biofilms of C. albicans (ALC2 and ALC3) with S. salivarius K12 showed a decrease by 62.5 ± 25.6% and 55.9 ± 17.1 %, respectively when compared to the expected biofilms when grown in RPMI that were predominated by hyphal form. Conclusion: S. salivarius K12 inhibited polymicrobial biofilms formation of C. albicans yeast and hyphal forms, thus supported the hypothesis that S. salivarius K12 inhibits biofilm formation of C. albicans.