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Synbiotic *Smallanthus Sonchifolius* (Yacon) and *Streptococcus Salivarius* inhibit *Candida Albicans* biofilm formation

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Abstract

Oral biofilms are comprised of extracellular polysaccharides and polymicrobial microorganisms. The objective of this study was to determine the effect of synbiotic *Smallanthus sonchifolius* (yacon) with *Streptococcus salivarius* K12 (K12) on polymicrobial biofilm formation of *Candida albicans* with the hypothesis that polymicrobial biofilm biomass of *C. albicans* is inhibited by synbiotic *S. sonchifolius* with K12. Initially, disk diffusion and well diffusion assay were conducted to determine the susceptibility of *C. albicans* towards *S. sonchifolius* and K12. Following that, *C. albicans* was mixed with *S. salivarius* in nutrient broth (NB) or RPMI-1640 to determine the effect of probiotic on the polymicrobial biofilm. To determine the effect of synbiotic, similar protocol was repeated by adding 800 mg mL⁻¹ of *S. sonchifolius* aqueous extract into the same followed by a 72 h incubation. Finally, biofilm biomass was measured using a crystal violet assay. *C. albicans* ATCC MYA-4901, ALC2 and ALC3 were found to be susceptible to *S. sonchifolius* extract and *S. salivarius* K12. However, the biofilm of all of *C. albicans* strains ATCC MYA-4901, ALC2 and ALC3 were found to reduce ranged in between 20% to 39.4% when co-cultured with synbiotic compared to prebiotic culture in NB. In conclusion, synbiotic *S. sonchifolius* with K12 inhibit polymicrobial biofilm. This indicates the potential use of synbiotic in dental application for the prevention *C. albicans* infection. © 2023 Author(s).

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