Molecular Detection and Genotyping of *Candida albicans* in Dental Caries Lesions of a Cohort of Sri Lankan Adults

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Dental caries is a global public health problem affecting more than two billion people worldwide. *Candida albicans* is known to have cariogenic properties and synergistic interactions with cariogenic bacteria. The association between *C. albicans* and caries severity, as well as its genotypic distribution in adults, remains poorly understood. This study aimed to investigate the occurrence of *C. albicans* in dental caries lesions and their genotypic diversity in a cohort of Sri Lankan adults. Plaque samples were collected from active carious lesions of 75 patients aged ≥18 years attending the Dental Teaching Hospital, Peradeniya. CHROMagar Candida medium was used for the presumptive isolation of *C. albicans*, followed by subculture on Sabouraud dextrose agar. DNA was extracted from isolated colonies, and PCR was performed for species-specific identification targeting the *KER1* gene, and for ABC genotypic identification targeting the transposable intron region within its 25S rDNA gene. The data were analyzed using R (version 4.4.2). The mean age of participants was 34.0 years (range: 18–73), with 72% females and 28% males. The mean DMFT (Decayed, Missing, and Filled Teeth) score was 9.6. *C. albicans* was detected in 46.7% (35/75) of samples. Fisher's exact test revealed a significant association between caries group and *C. albicans* positivity ($p = 0.02$). Pairwise Fisher's exact test demonstrated a significantly higher *C. albicans* positivity in the group with a DMFT score of >20 compared to the group with a DMFT score of 1–5 ($p = 0.02$). Binary logistic regression analysis further demonstrated a significant positive association between DMFT and *C. albicans* positivity (OR = 1.10, 95% CI: 1.01–1.21, $p = 0.02$). Among the genotypes, genotype A was predominant, accounting for 51.4% of positive isolates, while genotypes B and C were detected in 25.7% and 22.9% of isolates, respectively. These findings indicate an association between increasing caries severity and *C. albicans* positivity, highlighting the fungal involvement in the progression of dental caries. Being the first study in Sri Lanka to link *C. albicans* to increased caries severity among adults, our findings underscore the need for further longitudinal studies to establish causality and evaluate antifungal preventive strategies.

Keywords: ABC genotypes, *Candida albicans*, dental caries, molecular identification, Sri Lankan adults