

Molecular Identification of Candida Albicans from Patients with Oral Candidiasis and Analysis of Their Sensitivity to a Polyherbal Oral Health Care Formula

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Oral candidiasis is the most common opportunistic mucocutaneous fungal infection of the oral cavity and *C. albicans* is the predominant cause of oral candidiasis. Due to the emergence of antifungal drug resistance in *C. albicans*, natural products have gained global attention as alternative antifungal drug leads. This study aims to precisely identify *C. albicans* in clinical samples from patients with oral candidiasis and analyze their sensitivity to a polyherbal oral health care formula containing the bark of Cinnamon, fruit peel of Pomegranate, leaves of Jasmin, fruits of Cardamom, and flower buds of Clove developed at the Faculty of Dental Sciences. Initially, *C. albicans* colonies were identified on CHROMagar Candida medium and subsequently confirmed using a *C. albicans*-specific primer pair, SC1F and SC1R to amplify a 670-bp fragment of the *KER1* gene. Sequencing of the PCR amplicon and its alignment with the reference sequence from the NCBI database further confirmed the presence of *C. albicans*. Of the 10 clinical isolates tested, 6 were confirmed as *C. albicans*. When their sensitivity to the methanol extract of the tested polyherbal formula was analyzed using the Kirby-Bauer disk diffusion method (n=3), with 2 % Chlorhexidine as the positive control, all 6 isolates exhibited sensitivity to the tested polyherbal formula with activity indices of 1.27, 0.86, 0.93, 1.20, 1.09, and 1.10. As per the micro broth dilution assay findings, the Minimum Inhibitory Concentration (MIC) was 1 mg/ml. Hence, our study demonstrates that the species-specific SC1F and SC1R primers provide greater specificity and accuracy in the PCR-based detection of *C. albicans* compared to traditional culture-based methods. Furthermore, the polyherbal oral healthcare formula developed at the Faculty of Dental Sciences offers potential for new anticandidal drug development.

Keywords: Oral Candidiasis, *Candida Albicans*, PCR, Gene Sequencing, Oral Health Care Formula, Kirby-Bauer Disk Diffusion
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