THE EFFECT OF BAKUCHIOL ON BIOFILM-FORMING ABILITY OF ORAL Candida

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The pathogenesis of oral candidiasis is closely dictated by the formation of biofilms of Candida species in the oral cavity. It displays specific biological properties that are different from their planktonic counterparts and resistant towards the available antifungal drugs. Bakuchiol is one of the isolated components of the leaves of Psoralea glandulosa and seeds of Psoralea corylifolia, commonly used in folk remedies as antiseptic in treatment of infectious and skin diseases caused by bacteria and fungi. Previous studies have shown that bakuchiol exhibits strong antibacterial effects against oral microorganisms. This study aimed to investigate the antifungal activity of bakuchiol against different species of Candida, commonly inhabiting the oral cavity. Comparative analysis of biofilm production between controls and treated samples were performed to ascertain the antifungal properties of bakuchiol. A total of seven Candida species were compared for their biofilm-forming ability and quantified by crystal violet staining and XTT reduction assay. The minimum biofilm eliminating concentration (MBEC) demonstrated that the regrowth of biofilms could only be prevented at a high-fold concentration of bakuchiol. The MBEC endpoints were determined in the range of 500–250 µg/ml. Candida species produced moderate to high degree of biofilms after 24 h of cultivation. C. albicans, C. parapsilosis and C. tropicalis developed the highest biofilm, differed significantly (P<0.05) from C. dubliniensis, C. glabrata, C. krusei and C. lusitaniae. C. albicans had a positive impact in biofilm formation when inoculated with C. dubliniensis, C. glabrata, C. parapsilosis and C. tropicalis, whereas C. krusei and C. lusitaniae had a negative impact in combination. The biofilm-forming ability of Candida species were all significantly reduced (P<0.05) upon bakuchiol treatment except for C. glabrata. All seven Candida species were susceptible to bakuchiol and the significant reduction observed in biofilms formation suggested that bakuchiol would be a promising candidate for development of therapeutic strategy against biofilm associated oral candida and treating oral candidiasis.