Determination of the percentage inhibition of diameter growth (PIDG) of Piper betle crude aqueous extract against oral Candida species

Type: Article

Abstract:

Species within the genus Candida have been implicated in many fungal diseases such as candidiasis or thrush. The increasing clinical and microbiological resistance of Candida species towards several commonly prescribed antifungal agents however, has lead to the search for new active antifungal compounds from natural resources. This study was carried out to screen the susceptibility of the aqueous extract of Piper betle towards seven species of oral Candida. It was found that P. betle extract exhibited high antifungal activities towards Candida albicans, Candida tropicalis, Candida glabrata, Candida dubliniensis, Candida lusitaniae, Candida krusei and Candida parapsilosis. The minimal inhibitory concentration (MIC) and minimal fungicidal concentration (MFC) value of P. betle extract towards all Candida species was found to be similar (12 mg/ml) except towards C. albicans which has been shown to have MIC value of 12 mg/ml and slightly higher MFC value of 25 mg/ml. The recorded data on the growth responses of the species to various concentrations of the extract following a 24 h incubation period were analysed, using the percentage inhibition of diameter growth (PIDG) against chlorhexidine gluconate (CHX). The determination of PIDG values for C. albicans, C. tropicalis, C. lusitaniae, C. dubliniensis and C. glabrata has shown that the aqueous extract of P. betle outstrips the positive control used, that was 0.12% w/v chlorhexidine with PIDG values of more than 50% at P. betle concentration of 25 mg/ml. In contrast, PIDG for C. krusei and C. parapsilosis shows that at 25 mg/ml concentration of P. betle extract has little influence on growth inhibition compared to CHX. Thus, the results obtained have shown the potential use of P. betle extract as antifungal agent and thus significantly contribute to its antifungal development.

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