

### **Anti-Candidal Activity of *Piper betle*, *Vitex negundo* and *Jasminum grandiflorum***

**B.S. Nanayakkara<sup>1</sup>, C.L. Abayasekara<sup>1</sup>, G.J. Panagoda<sup>2</sup>, H.M.D.K. Kanatiwela<sup>1</sup> and M.R.D.M. Senanayake<sup>2</sup>**

<sup>1</sup> Department of Botany, Faculty of Science, University of Peradeniya

<sup>2</sup> Division of Microbiology, Faculty of Dental Sciences, University of Peradeniya

With the evolution of resistance by microorganisms to prevailing antimicrobials and the potential health hazards of synthetic antimicrobial drugs, the need for the discovery of new antimicrobial compounds is evident. Several plant products have been proven to have a potential as antimicrobial agents. Betel leaves which are commonly used as a masticatory agent in some communities and two other oral medicinal plants were investigated for their anti-candidal activity in the current study. The objectives of the study were to determine the anti-candidal activity of young and mature leaves of *Piper betle* L., ('Bulath' [S], 'Vettilai' [T] ) collected from the dry zone and wet zone of Sri Lanka, leaves and roots of *Vitex negundo* L. ('Nika' [S], 'Nir-nichchi' [T] ) and leaves of *Jasminum grandiflorum* L. ('Saman-pichcha' [S], 'Kodimalligai' [T] ) and to determine their Minimum Inhibitory Concentrations (MIC).

Water and ethanolic extracts of the plant material were prepared and their anti-candidal activity against standard cultures of *Candida albicans* (ATCC 90028), *Candida glabrata* (ATCC 90030), *Candida krusei* (ATCC 6258), *Candida parapsilosis* (ATCC 22019) and *Candida tropicalis* (ATCC 13803) was investigated by the agar well diffusion bioassay. Extracts which gave a zone of inhibition of  $\geq 3$  mm radius were reckoned to be significantly active. The MIC's of the active extracts were determined.

The ethanolic extracts of young leaves of *P. betle* showed significant anti-candidal activity against *C. albicans*, *C. glabrata*, *C. krusei*, *C. parapsilosis* and *C. tropicalis*. Young leaves showed a significantly higher anti-candidal activity compared to mature leaves ( $P < 0.05$ ). The MIC values obtained for the ethanolic extract of young leaves of *P. betle* against the five *Candida* spp. were 1.6 mg/mL for *C. albicans*, 0.8 mg/mL for *C. glabrata*, 1.6 mg/mL for *C. krusei*, 0.6 mg/mL for *C. parapsilosis* and 3.2 mg/mL for *C. tropicalis*. There was no significant difference between the anti-candidal activity of leaves of *P. betle* collected from the wet zone and the dry zone ( $P > 0.05$ ). The water extracts of leaves of *P. betle* and water and ethanolic extracts of leaves and roots of *V. negundo* and leaves of *J. grandiflorum* did not show a significant anti-candidal activity.

It could be concluded that the ethanolic extract of young leaves of *P. betle* has significant anti-candidal activity, and therefore has the potential to be used as a health care agent.