ANTI-CANDIDAL ACTIVITY OF SOME PLANTS IN THE EASTERN REGION OF SRI LANKA

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Anti-candidal activity of different parts including stem bark, leaves, fruits, seeds, fruit rind and seed shoots of twenty four plants from different eighteen families in Eastern region of Sri Lanka were investigated for their activity against seven different *Candida* species such as *Candida albicans*, *Candida dubliniensis*, *Candida guilliermondii*, *Candida parapsilosis*, *Candida rugosa*, *Candida sake* and *Pichia ohmeri*. Water extract of plants parts were screened for anti-candidal activity. The anti-candidal activity was assessed by measuring zones of inhibition of fungal growth surrounding the plant extract. In addition, the effects of extraction temperature on activity were evaluated in three different temperatures (Room temperature, 70 °C and 100°C). The stem bark extracts showed greater activity than the leaf extracts. In preliminary testing the procedure was carried out by using a single replicate for each plant parts. The extracts, which showed anti-candidal activity (≥ 6 mm diameter zone of inhibition) against at least five different *Candida* species, were repeated with triplicates to get average zone of inhibition. Among twenty four plants, twelve plants showed varied levels of anti-candidal activity to at least one of the tested *Candida* species and eight plant parts showed good activity against at least five *Candida* species. These eight plant species were *Anacardium occidentale* L., *Phyllanthus emblica* L., *Azadirachta indica* A. Juss., *Psidium guava* L., *Syzygium cumini* (L) Skeels., *Borasuss flabellifer* L., *Punica granatum* L. and *Rhizophora apiculata* Bl. The selected eight plant parts showed significant intra species variation against selected seven different *Candida* species at ($p > 0.05$) level. The increased activity of some of the plant extracts of the present study with the increased temperature may point out that increases the yield of the active compounds. *Anacardium occidentale* L. stem bark and *R. apiculata* Bl prop root bark water extract showed increased activity with increased temperature. The water extract obtained from stem bark of *R. apiculata* Bl after boiling showed the maximum activity against *C. parapsilosis* (18.67 mm) and boiled extracts of *Anacardium occidentale* L. showed maximum zone for *C. dubliniensis* (16 mm). At the

same time some plant extracts showed lower activity with increased temperature. *S. cumini* (L) Skeels stem bark activity decreased against *Candida* species when extracts were derived from boiling but extract obtained at 70 °C showed good activities against all seven *Candida* species. *A. indica* A. Juss. seeds and *P. granatum* L. fruit rind extract obtained at room temperature gave better activity against *Candida* species than that obtained at 70 °C and at boiling. Plant part extracts which showed significant anti-candidal activity were investigated for their minimum inhibitory concentration by using agar dilution assay (extraction at different temperature). Each *Candida* species showed varies level of MICs against eight selected plant parts extracts. *C. albicans* showed extreme resistance to the following plant parts; *P. emblica* L. stem bark, *B. flabelifer* L. seed shoot and *P. granatum* L. stem bark extract (MIC = $\geq$ 12.8 x 10^3µg/ml) and it was sensitive to *P. guava* L. stem bark (MIC = 0.4 x 10^3µg/ml). *C. dubliniensis* showed resistance to bark extract of *A. occidentale* L., *P. emblica* L. and *P. granatum* L. (MIC = 6.4 x 10^3µg/ml) and it was highly sensitive to *B. flabelifer* L. seed shoot extract (MIC = 0.1 x 10^3µg/ml). *C. sake* showed resistance to extract of *P. emblica* L. stem bark, *P. granatum* L. fruit rind, *Syzygium cumini*(L) Skeels and *R. apiculata* Bl. prop root bark with an MIC value of 6.4 x 10^3µg/ml. It was sensitive to *B. flabelifer* L. with MIC value of 0.4 x 10^3µg/ml. *C. rugosa* showed extreme resistance to stem bark extract of *P. emblica* L. and *S. cumini* (L) Skeels. with an identical MIC value of > 12.8 x 10^3µg/ml and it showed high sensitivity to *A. occidentale* L. stem bark extract (MIC = 0.2 x 10^3µg/ml). *P. ohmeri* showed resistance to *P. emblica* L. stem bark extract and *R. apiculata* Bl. prop root bark extract with an MIC value of 6.4 x 10^3µg/ml. It was highly sensitive to the seed shoot extract of *B. flabelifer* L. (MIC = 0.1 x 10^3µg/ml). *C. guilliermondii* showed resistant to stem bark extract of *A. occidentale* L., *P. emblica* L. and seed shoot extract of *B. flabelifer* L. (MIC = 6.4 x 10^3µg/ml). It was sensitive to *P. guava* L. stem bark extract (MIC = 0.8 x 10^3µg/ml). *C. parapsilosis* showed resistance to stem bark extracts of *P. emblica* L. (MIC = 12.8 x 10^3µg/ml). It showed sensitive to extracts of *P. guava* L. stem bark and seed shoot of *B. flabelifer* L. (MIC = 0.4 x 10^3µg/ml). The results obtained appeared to confirm the anti-candidal potential of the *A. occidentale* L. stem bark, *P. emblica* L. stem bark, *A. indica* A. Juss. seeds, *P. guava* L. stem bark, *S. cumini* (L) Skeels. stem bark, *B. flabellifer* L. seed shoot, *P. granatum* L. fruit rind and *R. apiculata* Bl. stem bark.