Abstract No: 451 ***Health and Hygiene***

EFFECT OF ROOT EXTRACT OF *PONGAMIA PINNATA* ON BIOFILM FORMATION OF *CANDIDA* SPP.

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Candidal infections have a close relationship with biofilms. Candidal biofilms have shown an increased resistance to antimicrobials compared to their planktonic counterparts. Hence, investigating new anti-biofilm agents from natural products is important in eradicating biofilm related candidiasis. The plant *Pongamia pinnata* has previously been shown to exhibit inhibitory activity against several candidal species. Hence, this study focused on evaluating the effect of root extracts of *P. pinnata* on biofilm formation (BF) of *Candida* spp.

Roots of *P. pinnata* were extracted in 75 % ethanol. *Candida albicans* (ATCC 90028) and three other clinical isolates of *Candida* spp. were used in this study. The biofilms were developed on polystyrene, flat bottomed, 96-well microtitre plates. The quantification of biofilms was carried out using MTT [3-(4, 5-dimethyl-2-Thiazolyl)-2, 5-Diphenyl-2H-Tetrazolium bromide]. Treatments with a concentration series of the ethanol extract were carried out at three phases *viz*; adhesion phase, biofilm phase and mature biofilms.

When the adhesion phase was treated, *C. dubliniensis* and *C. guilliermondii* achieved a significant reduction ($P < 0.05$) in BF at sub inhibitory concentrations. The adhesion of two isolates (*C. albicans* (ATCC 90028) and *C. parapsilosis*) was not affected by the extract. When the biofilm phase was treated with the extract, *C. albicans* (ATCC 90028) showed a significant increase ($P < 0.05$) in its BF at 2 MIC and 4 MIC while BF of *C. dubliniensis* increased significantly ($P < 0.05$) at all the concentrations above 1/2 MIC. BF of *C. guilliermondii* was not affected by the presence of the extract in the biofilm phase. In contrast, BF of *C. parapsilosis* displayed a significant reduction when its biofilm phase was treated with 8 MIC and 25 MIC. When the mature biofilms were treated with the extract, the viable cells of all the isolates showed a considerable increment compared to their control treatments.

The ability of the extract in reducing the initial attachment of *C. guilliermondii* and *C. dubliniensis* when they were treated with sub-inhibitory concentrations could be due to the reduction of the cell surface hydrophobicity (CSH). A reduction of CSH of aforementioned two isolates by sub-inhibitory concentrations of the extract has been previously proven. However, this plant extract seems to possess BF enhancing properties during the BF development period and on mature biofilms. Therefore, further studies are essential to confirm this finding.

Financial assistance given by the University of Peradeniya, Sri Lanka (RG/2012/32/D) is acknowledged.