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Determination of cytotoxicity and antifungal activity of different solvent extracts obtained from coconut testa flour of selected Sri Lankan coconut cultivars

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Coconut testa is reported as a rich source of phyto-constituents that claim various bioactivities. In this study, selected bioactivities of flour obtained from partially defatted coconut testa (CTF) of five Sri Lankan coconut cultivars namely, Gon Thembili (GT), Ran Thembili (RT), San Raman Tall (SR), Tall x Tall (TT) and commercial hybrid (COM) were investigated. CTF was sequentially extracted with hexane, ethyl acetate (EtOAc), and methanol (MeOH). The obtained crude extracts were subjected to cytotoxicity assay using the 2nd instar nauplii of *Artemia salina* while the antifungal activity was assessed using TLC bioautographic method against *Cladosporium cladosporioides*. Results showed that the majority of the extracts did not show inhibitory activity against *C. cladosporioides* except for the hexane and EtOAc fractions of COM cultivar. According to the result of the cytotoxicity assay, the hexane, EtOAc and MeOH extracts of CTF of different cultivars showed low to moderate toxicity ($LC_{50} > 2000$ ppm) towards *A. salina* whereas the overall lethality % was found to be dependent on the concentration of CTF extracts within the selected range of 50-2000 ppm. When comparing the results obtained for the highest CTF concentration level (2000 ppm), a significantly ($p < 0.05$) higher percentage of lethality was observed for hexane extracts of RT ($33.33 \pm 5.77\%$), EtOAc extracts of COM ($46.67 \pm 5.77\%$), TT ($43.33 \pm 5.77\%$) and MeOH extract of COM ($33.33 \pm 5.77\%$) compared to other cultivars. The results of this study confirmed the poor antifungal activity of CTF while demonstrating the degree of the potential of CTF to function as a cytotoxic agent and their varied activities among different Sri Lankan coconut cultivars. However, sample preparation method might have affected the results showed by hexane extract as partial defatting may remove potential antifungal and cytotoxic compound up to certain extent. It is clear that selective in-depth studies for cytotoxicity of CTF are needed for further elaborations. However, the results of this study would provide sound preliminary knowledge for future research aspects.

Keywords: Antifungal activity, Coconut testa flour, Cytotoxicity, Percentage of lethality, TLC bioautography

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