DETERMINATION OF PHYTOCHEMICAL AND ANTI-BACTERIAL ACTIVITY OF PSEUDO-STEMS OF LOCALLY CONSUMED BANANA VARIETIES IN SRI LANKA

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Although pseudo-stems of banana are considered as agricultural waste, it has many health benefits with potential food applications. Therefore, this study aimed to determine the phytochemical and anti-bacterial properties of pseudo-stems of local banana cultivars (*Ambul, Alukehel, Ambon* and *Kolikuttu*) together with the effect of cooking conditions on those properties. Both uncooked and cooked (at 98 ± 2 °C for 1.5 min) forms of selected pseudo-stems were extracted with two absolute solvent systems (acetone and ethanol). The antibacterial activity of the different concentrations of those extracts (7.5, 15 and 30 mg/100 µl) was determined by using the well-diffusion method with two reference bacteria; *Escherichia coli* and *Staphylococcus aureus.* While, the presence of phytochemical constitutes (tannin, flavonoid, alkaloids, saponins, and quinones), Total Polyphenol Content (TPC) and organoleptic properties (colour, appearance, texture, flavour and overall acceptability in cooked sample) were also determined. According to the results, the significantly strong($p<0.05$) inhibitory effects were reported by the ethanolic extracts (30 mg/100 µl) obtained from *Ambul* pseudo-stems. Amongst, uncooked *Ambul* pseudo-stems displayed the highest inhibition zones for *E. coli* (7.16 ± 0.06 mm) and *S. aureus* (7.38 ± 0.02 mm), while cooked pseudo-stems indicated the higher inhibition zone only for *S. aureus* (6.48 ± 0.02 mm). Subsequently, *Ambul* pseudo stems were subjected to different cooking times (5, 7.5 and 10 min.) at 98 ± 2 °C but none of them showed any antibacterial activity. All the samples indicated the presence of phytochemicals such as alkaloids, saponins, and quinones only. Further, pseud-stems of *Ambul* and *Alukehel* showed significantly higher ($p<0.05$) TPC (28.46 ± 1.38 mg GAE g^{-1}) and organoleptic properties respectively. In conclusion, the pseudo-stems of *Ambul* banana consisted of the highest phytochemical content and highest antibacterial activity among tested banana varieties and cooking time and temperature influences its anti-bacterial activity.

Keywords: Antibacterial activity, Banana, Phytochemicals, Pseudo stem