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Bioactive properties of Rambutan (*Nephelium lappaceum* L.) and Durian (*Durio zibethinus* Murr.) peel extracts

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Although these fruits are seasonal, a considerable amount of Rambutan (*Nephelium lappaceum* L.) and Durian (*Durio zibethinus* Murr.) fruit residues (mainly peels) are collected each year as waste materials, due to the significant volume of trade of these fruits. Therefore, present work was initiated with the aim of evaluating the impact of these residues lying as waste and possible re-use, by investigating the bioactive properties in peels of rambutan and durian. Methanol extracts of Rambutan and Durian peels were sequentially extracted with hexane, chloroform and methanol. First, methanol extracts of peels were subjected to phytochemical screening following standard procedures and results revealed that rambutan and durian peels were rich in polyphenols, flavonoids, steroids, coumarin, etc. Total phenolic content (TPC) and total flavonoid content (TFC) of methanol extracts of peels were determined using Folin-Ciocalteu and aluminium chloride method, respectively. Results showed that TPC and TFC in methanol extract of durian peels were (11.39 ± 0.49 mg GAE/g dry weight, 257.20 ± 5.14 mg Catechin /g dry weight) higher than those of Rambutan peels (2.73 ± 0.15 mg GAE/g dry weight, 198.00 ± 1.89 mg Catechin /g dry weight). Further, the antioxidant activity of methanol extracts of peels and its fractions were investigated using 1, 1-diphenyl-2-picryl-hydrazyl free radical (DPPH) scavenging assay and the correlation with their TPC and TFC were examined using Pearson's correlation analysis. The strongest antioxidant activity was observed in hexane fraction of Rambutan peels with IC_{50} value of 13.49 ± 0.52 μ g/mL, and which was lower than that of the control, butylated hydroxytoluene (43.70 ± 0.89 μ g/mL). Significant positive correlations were observed between TPC and TFC in fractions of rambutan and durian peels with their DPPH radical scavenging activity indicating that phenolics and flavonoids in rambutan and durian peels may contribute to their strong antioxidant activities. The antimicrobial activity of the extracts of peels and its fractions were assessed by using disc diffusion method against a bacterial species of *Staphylococcus aureus* and fungal species, *Fusarium oxysporum* and *Aspergillus flavus*. The lowest concentration of methanolic extract of durian and rambutan peels that showed an inhibition against *Staphylococcus aureus* was 31.25 μ g/mL. It was also found out that neither peels of rambutan nor durian had antifungal activity against the two selected fungal species. Results revealed that the peels of rambutan and durian are potential sources of antioxidants and antibacterial agents.

Keywords: Antioxidant activity, Antimicrobial activity, Correlation, TPC, TFC

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