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In vitro antioxidant activity and total polyphenolic content of fruits and flowers of *Aleurites moluccana* (L.) Willd

H D S M Perera and R Samarasekera*
Industrial Technology Institute, 363, Bauddhaloka Mawatha, Colombo 07

Investigation of natural bioactive ingredients is an emerging research field of great potential especially in biodiversity hotspots such as Sri Lanka. *Aleurites moluccana* (L.) Willd. (Euphorbiaceae) also known as Candlenut (Thelkakuna), is a tropical plant native to the region of Indo-Malaysia. The plant has been extensively used in the traditional system of medicine for the treatment of many diseases such as gonorrhea, skin sores, bowel diseases and free radical mediated ailments such as tumours, ulcers, swollen joints, asthma. The objective of the present study was to determine the antioxidant activity and total polyphenolic content of ethanol extracts of flowers and fruits of *A. moluccanain vitro*.

Air-dried and powdered fruits and flowers were extracted with ethanol using cold extraction technique. The antioxidant activity was determined using diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging, ferrous ion chelating (FIC), ferric reducing antioxidant power (FRAP) and oxygen radical absorbance capacity (ORAC) assays. Total polyphenolic content (TPC) was determined by Folin-Ciocalteu (FC) method.

The ethanol extract of flower of *A. moluccana* showed higher DPPH free radical scavenging activity (IC_{50} = 19.34 ± 0.11 µg/mL), FRAP (3584.2 ± 44.46 mgTrolox Equivalents (TE)/g), ORAC (700.76 ± 94.7 mgTE/g) and TPC (129.86 ± 0.45 mg Gallic acid equivalent (GAE)/g) compared to that of fruit extract. (DPPH: IC_{50} = 51.29 ± 1.09 µg/mL, FRAP = 3019.17 ± 39.3 mg (TE)/g, ORAC = 369.32 ± 38.66 mg TE/g and TPC = 59.8 ± 1.83 mg GAE/g). The ethanol extract of fruit showed a higher FIC activity (IC_{50} =1630.58 ± 92.42 µg/ mL) compared to that of flower extract (IC_{50}= 5402.49 ± 175.44 µg/mL). The flower and fruit extracts exhibited dose dependent activities in DPPH free radical scavenging and FIC assays. There was a significant difference ($P<0.05$) in the antioxidant activity among the reference standards, ethanol extracts of flowers and the fruits of *A. moluccana*. The flower extract showed significantly a high antioxidant activity in comparison to fruit extract in all assays except in FIC assay ($P<0.05$). The results of the present study can be attributed to the antioxidant potential of fruits and flowers of *A. moluccana* thus justify the value of the plant as a natural source of antioxidants. The extracts can be considered as promising for the future investigation of bioactive compounds.

Keywords: *A. moluccana*, DPPH, FIC, FRAP, ORAC, TPC

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radhika@iti.lk Tel: 0714433815