

Total Phenolic Content, Total Flavonoid Content and Antioxidant Activity in Whole Fruits of Ceylon Gooseberry (*Dovyalis hebecarpa*) at Different Maturity Stages

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Ceylon gooseberry (*Dovyalis Hebecarpa*) or Ketambilla is an under-utilized fruit plant in Sri Lanka with untapped potential. It bears small, deep purple berries that are packed with antioxidants, pigments, and vitamins, making them suitable for various medicinal and commercial uses. Antioxidants are increasingly valued for their ability to combat oxidative stress-induced health issues in the body. This study aimed to address the absence of a comparative study on the contents of phenols, flavonoids and antioxidant activity of three maturity stages of Ketambilla; raw, near-ripe and ripe. Freeze-dried whole fruit samples were extracted in methanol (100%) by maceration for 72 hours. Total phenolic content (TPC) was assessed by Folin-Ciocalteu method. Total flavonoid content (TFC) was evaluated by aluminium chloride method. A concentration gradient of the extracts (0.03125, 0.0625, 0.125, 0.25, 0.5, 1.0 mg/ml) was assessed for antioxidant activity by 2,2-diphenyl-1-picrylhydrazyl (DPPH) and 2, 2'-azino-bis-(3-ethylbenzothiazoline-6-sulfonic) acid (ABTS) assays with ascorbic acid as the positive control. Out of all three extracts, the highest TPC was demonstrated by the near-ripe as 16.8228±1.6060 mg GAE/g. The maximum TFC value was also depicted by near-ripe as 0.5001±0.0582 mg QE/g. From DPPH assay, the 50% Inhibition concentration (IC₅₀) values were obtained as 0.3449±0.0342, 0.2442±0.0222 and 0.2225±0.0421 mg/ml respectively by near-ripe, raw and ripe extracts. The IC₅₀ values recorded from ABTS assay, were greater than 1 mg/ml in all extracts. The study suggests that Ketambilla fruit has a notable phytochemical content and antioxidant capacity. In terms of phytochemical content, it is best to consume in the near-ripe stage.

Keywords: *antioxidant activity, maturity stages of fruit, under-utilized, Dovyalis hebecarpa*