

Ripening characterization, fruit quality and sensory attributes of *Passiflora* *quarangularis* L.

ABSTRACT

Passiflora quadrangularis is a genus *Passiflora* species well-known for its beautiful flowers, large and aromatic fruits with edible mesocarp and pulp. Although it is cultivated substantially, scientific studies pertaining to *P. quadrangularis* fruit quality characteristics at different harvesting maturity and sensory attributes of this fruit harvested at various stages of maturity are very scanty. Therefore, the present study aims to examine the quality features of *P. quadrangularis* at different harvesting stages for optimum harvest maturity and characterize the sensory properties and preference segments for *P. quadrangularis* among local consumers. The fruits at three ripening stages were harvested and tested for their physicochemical properties. The quantitative descriptive analysis (QDA) method using trained panelist and consumers were conducted for sensory evaluation and acceptability of this fruit. Nutritional properties were determined using the standard protocol of Association of Official Analytical Chemists (AOAC). The optimum harvesting period of this fruit was 55 to 60 days after anthesis (DAA). During ripening at day 60, fruit firmness was 3.33 ± 0.10 N, with a total soluble solid of the pulp at 14.57 ± 0.33 °Brix. Pulp and mesocarp pH also increased slightly at ripening, 3.76 ± 0.02 and 5.14 ± 0.02 , respectively. The trained panelists used sweet, juicy, with a little sourish to describe the taste of the fully ripened fruits (60 DAA), while crunchy with mild sweetness was used to describe the taste of the fully matured fruits (50 DAA). The Internal Preference Mapping (IPM) matrix of hedonic ratings on the acceptability of *P. quadrangularis* fruits among consumers revealed that fruits harvested at full ripen (60 DAA) were suitable to be consumed as fresh, with a matrix of 70-80% for mesocarp and 60-70% for pulp. Unripe fruit had hedonic ratings of 40-50% and was suggested to be cooked as a vegetable. Notably, the pulp of the fully ripe fruit was high in carbohydrates ($7.36 \pm 0.21\%$) and protein ($2.55 \pm 0.14\%$), whereas the mesocarp was high in fibre ($2.36 \pm 0.07\%$). The findings support the significant importance of harvest maturity on *P. quadrangularis* fruit quality attributes and overall consumer acceptance.