Physico-chemical and structural changes of red-fleshed dragon fruit (Hylocereus polyrhizus) during fruit development.

ABSTRACT

BACKGROUND: Determination of physico-chemical (weight, length, diameter, stomatal density, respiration rate, colour, soluble solids concentration, titratable acidity, chlorophyll and betacyanin content) and structural changes of red-fleshed dragon fruit (Hylocereus polyrhizus (Weber) Britton & Rose) was carried out from 5 to 35 days after pollination (DAP) in order to explain their growth, development, maturations and ripening stages. RESULTS: Fruit growth of red-fleshed dragon fruit followed a sigmoid growth pattern. Significant changes in colour were obtained in both peel and pulp as DAP progressed, which were indicated by reductions of L*, C* and h° values as both changed from green to red-violet colour at ripening. Red-violet betacyanin was manifested earlier in pulp at 25 DAP, followed by peel 4-5 days later, and finally both peel and pulp turned full red-violet by 30 DAP. There was a significant increase in soluble solids concentration and titratable acidity with the continuous increase in betacyanin content as DAP progressed. CONCLUSION: The physico-chemical and betacyanin accumulation of red-fleshed dragon fruit changed as it developed, matured and ripened which coincided with structural changes.

Keyword: Postharvest; Colour; Cellular structure; Betacyanin.