

## 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  $h^\circ$  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.