

Title Characterization of symptoms of senescence and chilling injury on inflorescences of *Heliconia bihai* (L.) cv. Lobster Claw and cv. Halloween

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Abstract

Inadequate temperatures during the shipping and commercialization of cut tropical flowers may accelerate the senescence process and cause chilling injury, leading to symptoms that have not yet been described for *Heliconia bihai*. The aim of the present study was to evaluate physiological responses in cut inflorescences of *H. bihai* cv. Lobster Claw (LC) and cv. Halloween (HW) as well as symptoms of senescence and chilling injury. For such, changes in fresh weight, bract color (L^* , a^* and b^*), percentage of absolute integrity (PAI) of cell membranes and leakage of potassium ions (LPI) were determined. The flowering stems were evaluated at five different intervals after harvest (0, 2, 4, 6 and 8 d). A refrigerated treatment (RT) with a temperature of 6.5 °C and 85% relative humidity was compared to a control treatment (CT) at room temperature of 24 °C and 66% relative humidity. Both cultivars stored at 6.5 °C exhibited dryness of bract tissue (symptom of senescence) and dark stains that became brownish and evolved to necrosis (symptom of chilling injury). The visual quality of inflorescences decreased with time in both cultivars maintained without refrigeration. The severity of chilling injury increased with the length of storage time in both cultivars. There was a significant reduction in the fresh weight of inflorescences in both treatments (RT and CT) and both cultivars (LC and HW). Bract color changed in both cultivars at 6.5 °C. There was no change in PAI throughout the evaluation period in the inflorescences stored at room temperature, whereas those stored at 6.5 °C for 6 and 8 d had lower PAI values. The inflorescences in the control treatment underwent no change in LPI values, whereas those stored under refrigeration had increased LPI values after the sixth day of storage. The physiological responses of cut *Heliconia* flowers were influenced by storage period and temperature, as demonstrated by visual symptoms of chilling injury and senescence.