

Physiological changes of torch ginger (*Etilingera elatior*) inflorescence during development

ABSTRACT

The present study was undertaken to reveal the developmentally regulated changes in physical and physiological characteristics of torch ginger (*Etilingera elatior*) inflorescence in relation to its usage as a cut flower. The inflorescences at four developmental stages, i.e., tight bud (TB), six reflexing tip (SRT), all involucre bracts unfolded (IBU), and full bloom (FB) were studied. The results revealed that the fresh and dry weights of inflorescences increased significantly from TB to FB stage. Water was the main component of inflorescence with 90.8% to 91.9% of the total mass. Thus, cell expansion resulting from water influx is crucial for inflorescence head development and bract opening. No ethylene was detected in the inflorescences at the four developmental stages. However, a significant higher respiration rate was recorded at FB stage with actively developing and opening true flowers in the inflorescence. The high respiration rate eventually leads to depletion of soluble sugars and starch grains in involucre bracts and inflorescence peduncle, respectively. Thereafter, involucre bracts showed browning and senescing. This result implies that the inflorescence head is a major sink for photoassimilates during flowering stage. Thus, soluble sugars exhaustion is expected to be a main factor of inflorescence senescence.

Keyword: Bract browning; Carbohydrate depletion; Soluble sugars; Starch distribution; Sympodial growth