

**Title** Carbohydrate changes during flower senescence of the Easter lily (*Lilium longiflorum* Thunb.)

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#### **Abstract**

This research was initiated to examine changes in ethanol soluble carbohydrates and cell wall neutral sugar composition in various floral organs of cut *Lilium longiflorum* Thunb. (Easter lily) flowers. Fresh weight of anthers decreased sharply, reaching a minimum level 3 days post-anthesis (DPA). Tepals began to lose their firmness 6 DPA, and flowers were considered senesced 11 DPA. The level of soluble sucrose from anthers was the highest 2 to 3 DPA. Conversely, the level of glucose and fructose reached their lowest levels, thus limiting the available carbon sources in anthers after anthesis. Arabinosyl and galactosyl residues were only detected in polysaccharides from exudates produced at the latter stages of flower development. The xylosyl, galactosyl, rhamnosyl, non-cellulosic glucosyl, mannosyl, and arabinosyl contents of cell wall materials decreased by 50% 3 DPA. Galactose and xylose were the major cell wall neutral sugar components, and remained the highest compared to other cell wall sugar residues during the entire period of flower bud senescence. It is possible that a rapid decrease in glucose and fructose could arrest anther development or the maturation of pollen and trigger tepal senescence.