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Photoinhibition and photoprotection during flower opening in lilies

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Highlights

- Chlorophyll contents and the maximum PSII efficiency decreased during flower opening in *Lilium litouwen*
- Decreases in β -carotene and xanthophyll contents may be associated with photoinhibition
- Flowers treated with Promalin® showed delayed opening
- The extent of lipid peroxidation appears to be finely controlled to allow a correct development of *L. litouwen* flowers in a time-dependent manner

ABSTRACT

Although most studies to extend vase life in cut flowers have focused on flower senescence thus far, flower opening is a complex process of major biological significance in the determination of flower commercialization. In order to better understand flower opening, this study evaluated to what extent photoinhibition and photo-oxidative stress are associated with tepal de-greening during flower opening in lilies (*Lilium* “Litouwen”). We estimated the degree of photoinhibition, the capacity for photo- and antioxidant protection, and the extent of lipid peroxidation at four flower opening stages, from closed flowers to anthesis. Additionally, we evaluated to what extent and by which mechanisms related to photo- and antioxidant protection,

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