

Hormonal regulation of flower opening in *Iris*

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Abstract

At the time of harvest the floral buds of *Iris* flowers (*Iris x hollandica*) are enclosed by green sheath leaves and the tepal tips are just visible. Flower opening depends on elongation of pedicel and ovary in order to uplift the flower base up to a position whereby the tepals can move laterally. In the pedicels + ovaries of unstressed control flowers the rate of ethylene production showed a peak during flower opening. When the flowers were dehydrated for 2 days at 20°C and 60% RH, they did not open when subsequently placed in water, and showed inhibited elongation in the pedicel + ovary. The dehydration treatment resulted in increased ethylene production of pedicel + ovary. Treatment with ethylene inhibitor STS overcame the effect of dehydration on elongation and resulted in full flower opening. Pulsing with gibberellic acid (GA) prior to dry storage overcame the effect of water stress on flower opening by increasing pedicel elongation. However, inhibitors of GA had no effect. Auxin treatments increased elongation and promoted flower opening. Inhibitors of auxin prevented flower opening of flowers that had not been water-stressed. It is concluded that the normal opening of *Iris* flowers is regulated by auxins, while ethylene inhibits opening in water-stressed flowers.