

Title Gibberellic Acid (GA₃) Inhibits ROS Increase in Chloroplasts During Dark-Induced Senescence of *Pelargonium* Cuttings

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Abstract

The temporal and spatial changes in reactive oxygen species (ROS) during dark treatment of *Pelargonium* cuttings and the effect of gibberellic acid (GA₃) on ROS levels were studied. ROS-related fluorescence was detected in mitochondria and cytoplasm of epidermal cells and in chloroplasts. By monitoring dichlorofluorescein (DCF) fluorescence, an initial decrease in ROS was observed under darkness in the epidermal cell cytoplasm and the chloroplasts, which was followed by an increase on the third day. Following 3 days under darkness, the size and the structure of the chloroplasts also changed, and they became more sensitive to illumination as judged by a higher accumulation of ROS. Pretreatment of leaves with GA₃ did not prevent the structural changes in the chloroplasts, but it inhibited the increase in ROS levels in all cell compartments, including the chloroplasts. It is suggested that the inhibition of ROS increase by GA₃ prevented complete disintegration of chloroplasts during dark-induced senescence and thereby enabled the maintenance of chlorophyll levels in the tissue.

<http://www.springerlink.com/content/r0157640j74v73n1/fulltext.pdf>