Abstract

Cut Grevillea `Crimson Yul-lo' stems, with large bright red terminal inflorescences, have cut flower potential. The major limitation is their relatively short vase life (viz. <1 week). Vase life is generally terminated by wilting of the inflorescence. Preliminary observations suggested that stern-end blockage may be the critical factor eliciting wilting. Experiments were conducted to characterise dilute chlorine (10μg/mL available chlorine; bactericide) solution uptake by cut `Crimson Yul-lo' inflorescences Hydraulic conductance of 2-cm long stem-end segments declined rapidly, and was consistently lower throughout vase life, than that of 2-cm long stem segments front higher on the stem. Re-cutting daily, by removal of the basal 2-cm from stem-ends, increased vase solution usage and delayed inflorescence wilting, thereby improving vase life. Wound-related deposition of phenolic compound, (e.g. suberin) has been associated with stem-end blockage in cut flowers. S-carvone is a potential inhibitor of suberin formation, via inhibition of phenylalanine ammonium lyase activity. Vase solution treatments with S<carvone (0.032 - 0.636 mM) delayed the fall in hydraulic conductance of basal 2-cm long stem segments and extended inflorescence vase life. Hexylresorcinol is an inhibitor of catechol oxidase. Stem-end blockage was delayed by vase solution treatments with hexylresorcinol (2.5 - 10 mM). However, although hexylresorcinol treatments maintained stem-end hydraulic conductance and vase solution usage, they caused leaf browning (viz. phytotoxicity). The results suggest that the stem-and blockage in cut `Crimson Yul-lo' stems is due to a physiological process that may involve activity of phenylalanine ammonium lyase and catechol oxidase enzymes.