Abstract:

We studied the role of ethylene and sugar (sucrose) supply in ovary growth of *Dendrobium* 'Pompadour'. Ethylene synthesis was inhibited using aminooxyacetic acid (AOA). Sucrose was supplied in a holding solution also containing two antimicrobial compounds (8-hydroxyquinoline sulfate and silver nitrate). Control flowers were left unpollinated. Ovary growth only occurred after pollination, and was completely suppressed by AOA treatment. AOA was not toxic in unpollinated control flowers. Sucrose (5%) with the holding solution had no effect on ovary growth. Preliminary experiments with pollinated *Dendrobium* Sonia Bom # 28 flowers also showed complete suppression of ovary growth by AOA, whilst ovary growth was stimulated following treatment with exogenous ethylene. Flower wilting was the main determinant of the length of vase life; from day 8 some flowers also started to fall. In unpollinated flowers, AOA delayed the time to wilting of 50% of the flowers, but did not affect the time to flower abscission. Sucrose increased vase life of unpollinated orchid flowers by delaying wilting and a suppressing flower abscission. In contrast, the sucrose solution did not affect the (much shorter) vase life of pollinated flowers. In contrast to unpollinated climacteric flowers, like carnation, where sugars reduce sensitivity to endogenously produced ethylene, such a decrease in sensitivity apparently does not occur in pollinated *Dendrobium* flowers.