

Title Investigation of potential antibacterial action for postharvest copper treatments of cut *Acacia holosericea*

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Abstract

The mechanisms of action of Cu^{2+} in improving the longevity of cut flowers and foliage have not been elucidated. Possible antimicrobial action of Cu^{2+} against stem end and vase solution colonising bacteria was investigated using Cu^{2+} treatments optimised for cut *Acacia holosericea* A. Cunn. ex G. Don foliage stems. These treatments were a 5 h pulse with 2.2 mM Cu^{2+} or a 0.5 mM Cu^{2+} vase solution *versus* a deionised water (no Cu^{2+}) control. Bacterial growth over time was assessed by a standard plate count agar technique and with scanning electron microscopy. Cu^{2+} treatments significantly extended the cut foliage vase life. However, they did not have sustained antibacterial activity against stem end or vase solution colonising bacteria. Also, regular recutting of 1–2 cm from the stem ends did not substantially improve either cut stem water relations or longevity. The positive effects of Cu^{2+} treatments were unaffected by the repeated stem end recutting. It was concluded that the primary mechanism of Cu^{2+} was not antibacterial. Moreover, naturally growing vase solution and stem end microbial populations had relatively insignificant effects on cut *A. holosericea* vase life. Research into alternative mechanisms of Cu^{2+} is required.