

**Title** Evaluation of aluminium sulfate as vase solution biocide on postharvest microbial and physiological properties of 'Cherry Brandy' rose

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**Citation** Abstracts of 7<sup>th</sup> International Postharvest Symposium 2012 (IPS2012). 25-29 June, 2012. Putra World Trade Centre (PWTC), Kuala Lumpur, Malaysia. 238 pages.

**Keywords** *Bacillus subtilis*; chlorophyll content; chlorophyll fluorescence; *Fusarium solani*; membrane permeability; water relation

### Abstract

The major cause of vase life reduction in cut flowers is water relation interruption which is mostly due to vase solution microbial proliferation and consequently vascular occlusion resulting in solution uptake reduction. In order to control microbial proliferation, biocides are usually integrated in vase solution preservatives. Beside microbial proliferation control, biocides could affect cut flower's quality and physiology in various aspects. In order to found an easy to use, non toxic and inexpensive compound for large scale application, cut 'Cherry Brandy' roses were treated with aluminum sulfate (100, 200 and 300 mg l<sup>-1</sup>) and sterilized distilled water (control). Effects of aluminum sulfate application as vase solution biocide and its impact on vase life, water relation, vase solution microbial kind and population beside different physiological parameters such as chlorophyll degradation, chlorophyll fluorescence and membrane permeability were investigated. Results indicated that aluminum sulfate treatment significantly increased vase life and improved postharvest visual quality of this cultivar by retaining leave freshness even at the end of vase life. Controversially solution uptake was reduced at most stages of vase life by aluminum sulfate application while fresh weight was best retained by this compound especially during the second week of vase life. This compound significantly controlled microbial proliferation resulting in zero contamination until day 4. After which a few isolates of *Bacillus subtilis*, *Bacillus polymexa*, *Pectobacterium* sp., *Coccus* and *Fusarium solani* were found. Membrane permeability was best maintained by 300 mg l<sup>-1</sup> aluminum sulfate treatment. Besides that, aluminum sulfate increased leaf chlorophyll content while it resulted in chlorophyll fluorescence reduction during vase life.