

**Title** Effects of anti-ethylene compounds included in nanosponges in improving the postharvest longevity of carnation (*Dianthus caryophyllus*) and buttercup (*Ranunculus asiaticus*) cut flowers

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### Abstract

Nanosponges are new nano-sized colloidal carriers synthesized from  $\beta$ -cyclodextrins. They have been mainly applied in the chemical-pharmacological field and in waste water decontamination processes. In floriculture, they have been recently developed and proposed for delivering preservative and anti-ethylene compounds in order to improve cut flower vase life. In the present study, nanosponges including anti-ethylene molecules, such as 1-methylcyclopropene (1-MCP; 500 and 1000 mg/L), 1-methylcyclopentene (1-MCpT; 471.26 mg/L), 2,5-norbornadiene (2,5-NBD; 478 mg/L) and silver nitrate ( $\text{AgNO}_3$ ; 319.3 mg/L) were evaluated in *Dianthus caryophyllus* 'Idra di Muraglia' and *Ranunculus asiaticus* 'Elegance'. These compounds were added directly in the tap water used for cut flower conservation. In carnation cut flowers, 1-MCP-nanosponge complex (500 mg/L) added to tap water outperformed the other treatments in extending the vase life, increasing the longevity for 12 days (vase life of 23 days). On the contrary, no effects were observed in *Ranunculus*. Since it seems that this nano-colloidal carrier could give several advantages to the floriculture field, it appears interesting to further investigate the use of nanosponges as carrier for preservative molecules for improving the cut flower vase life and to extend this research to various ornamental species.