Title Vase solutions containing combinations of malic acid, succinic acid and ethanol and their effects on vaselife of cut carnation flowers

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Abstract

The study was conducted in a factorial experiment with complete randomized design. The experimental factors were succinic acid (0.1, 2 mM), malic acid (0.1, 2 mM) and ethanol (0, 0.1 and 0.5 M). Changes of the chlorophyll content of leaves, wet weight reduction, MDA content, absorbed vase solution and visual quality were measured in 8 th day of experiment. While similar effects to malic acid by succinic acid were speculated due to their interaction in Krebs cycle, but this was not indicated by the results. Succinic acid decreased vase life and dry weight and reduced the wet weight loss in 2 mM level. Malic acid and ethanol at all concentrations however, increased the vase life. Malic acid was effective in reduction of EC in 2 mM level and decreased the wet weight reduction in a linear manner. Ethanol increased the absorbed vase solution and increased the vase life, and reduced wet weight loss and chlorophyll a content in 4% level. Ethanol reduced the dry weight of cut flowers as well. By mean comparison of factor levels, it was revealed that the combination of SA 0mM + MA 1mM + Et 4% caused significantly longer vase life (11.1 days) compared to contro1 (9 days, distilled water). This combination also showed significant reduction in wet weight and dry weight loss compared to control treatment. While considering the quality of storage the difference was better expressed. The visual appearance score on 8th day of experiment was 3.7 for this treatment compared to 1.8 for control. A significant interaction between malic acid and succinic acid was noted on EC, vase life, wet and dry weight loss and the chlorophyll content. Except for vase life, all these traits were under interaction of succinic acid and ethanol and roughly, similar traits were affected by interactions of malic acid and ethanol. This indicates that these substances affect as antagonistic or synergistic on biochemical pathways that are possibly connected.