Extraction and comparison among essential oils of aromatic geranium, cumin and dill with 8- HQ on bacterial population control and longevity of cut carnation cv. 'Yellow Candy'

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Abstract Carnation (Dianthus caryophyllus L.) is one of the most popular cut flowers in the world and is extensively planted around the world. It is economically valuable to improve the longevity and post-harvest quality of carnation cut flowers. The present study was carried out to examine the effect of plant essential oils as compared to 8-hydroxyquinoline on the control of bacteria population and the longevity of carnation cut flowers on the basis of a complete randomized design with 14 treatments, three replications, and 42 plots – each plot including 5 flowers totaling 210 flowers. The treatments were control (distilled water), control alcohol at one level (2%), 8-hydroxyquinoline sulfate (8-HQS) at three levels (100, 200 and 400 mg l-1), and the essential oils of dill seeds, caraway seeds, and aromatic geranium, each one at three levels (50, 100 and 150 mg l-1) applied continuously. The recorded traits included vase life, solution uptake, the increase in degree Brix, fresh weight loss, dry matter percentage, stem-end and vase solution bacteria population, ionic leakage, malondialdehyde, peroxidase, catalase, ethylene, carotenoid, chlorophyll a, b and total chlorophyll. The longest vase life was obtained the treatment of alcohol 2%, 100 mg l-1 dill essential oil, 50 mg l-1 geranium essential oil, 100 mg l-1 caraway essential oil, and 400 mg l-1 8-HQS. 8-HQS is not recommended because it was used just for comparison with essential oils, and alcohol is not recommended because it is a solvent of essential oils. Dill essential oil (100 mg l-1) was the best treatments for all traits except carotenoid and chlorophyll. Geranium essential oil (50 mg l-1) performed considerably better in all traits except in pigments, degree Brix, and fresh weight loss. Caraway essential oil (100 mg l-1), also, showed acceptable performance for

most traits and just had adverse impact on dry matter percentage, ionic leakage, and chlorophyll. In total, dill essential oil (100 mg l-1) is recommended as the best environmentally-friendly treatment.

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