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XV Encontro de Química dos Alimentos



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ESTRATÉGIAS PARA A EXCELÊNCIA,
AUTENTICIDADE, SEGURANÇA
E SUSTENTABILIDADE ALIMENTAR



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OC56: The effect of essential oils on the post-harvest quality of sweet cherry, *Prunus avium* L. cv. Summit

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Sweet cherry (*Prunus avium* L.) is a very well appreciated and consumed fruit, not only for its sweetness, smell, and fruity taste, but also for its visual attractiveness and recognized nutritional value. Sweet cherries are rich in sugars, phenolics, anthocyanins and melatonin. ¹ Its consumption prevents the appearance of vascular diseases, cancer, diabetes and inflammatory diseases. ² In 2019, the national production was 19130 ton. ³ The production is concentrated in two producing regions, one in the interior centre of the country, Fundão region, and the other in the north interior land, in the regions of Lamego-Resende and Alfandega da Fé. Sweet cherry is a non-climacteric fruit with a reduced post-harvest period that requires low temperature around 0.5 °C and relative humidity around 90%. ⁴ The fruits are generally consumed in fresh as raw fruit. Nevertheless, the modern style of life looks for practical ways to present the fruits, generally in individual packages. Furthermore, in some cases, in the local market, there are no availability of cold storage, being the fruits preserved at room temperature, causing high percentages of decay in few days. Essential oils are recognized as possessing antioxidant and antimicrobial activities and could be used as food preservative among other applications in food industry.

In this context, with this work we intended to study the effect of two essential oils, from sweet orange (*Citrus sinensis* cv. Late) and lavender (*Lavanda angustifolia* Mill.), on the post-harvest quality of sweet cherry, *P. avium* Cv. Summit. Plastic individual packages with 100 g of fruits were prepared, and in the top of the recipient, a filter paper of 1 cm² of diameter was put. In each paper filter, 10 microliters of essential oil were added, being the control treated with distilled water. The packages were stored at room temperature. On each day, during seven consecutive days, the following parameters were evaluated for each treatment: colour, rupture force, elasticity, loss of weight, total soluble solids (TSS), titratable acidity, pH, and sensory evaluation. For each treatment and each day, three independent assays were made.

In general, the results indicated that the treatments caused different effects on the cherries. The colour of the cherries changed along storage, acquiring brownish colour after 7 days. This effect was mainly observed in the fruits of the control and those submitted to the lavender essential oil (Figure 1). It was also with this essential oil, that the highest loss on the texture, measured by the rupture force, was observed. When comparing the rupture force measured after 7 days with the beginning, a decrease of 39, 53 and 36% were determined for the control (without essential oil), lavender and orange essential oils, respectively. Similar trend was observed for elasticity, suggesting a softening effect by the lavender essential oil. Almost all situations, the loss of weight increased after 4 days. Concerning the TSS, the values oscillated along the storage time, without a definite trend, ranging the means between 11.3 and 13.4 °Brix. The titratable acidity was not affected by the treatments and the storage time, varying between 0.4 and 0.6 g malic acid/100 g fresh weight. Similar trend was observed for the pH (3.5 to 4.1). Concerning the sensory evaluation, the essential oils were detected by the panellists as a strange odour; however, the orange essential oil was more acceptable than the lavender. Furthermore, after 7 days, the damage intensity was higher in the control and lavender essential oil (Figure 1).

In conclusion, the present work indicated that after four days at room temperature, the quality of the cherries was quite affected; however, the orange essential oil seems to delay these effects.



Figure 1. Visual aspect of the cherries subjected to the treatments – without essential oil (control), orange and lavender essential oils – at the beginning and after 7 days at room temperature.

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