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*12. Controlling Temperature to Reduce Respiration Rate of Fresh-Cut Orange*

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Fresh fruits are living tissues which continue to respire, consuming oxygen and producing carbon dioxide and water vapour (1). Cut fruit is supposed to have a different behaviour than the whole fruit. One might expect an increase of respiration rate (5). The shelf-life of fruits varies inversely with the rate of respiration (2). Temperature is the most important environmental factor in the postharvest life of fresh fruits because of its dramatic effect on rates of biological reactions, including respiration. (4). For a 10 °C rise in temperature, respiration rate is roughly doubled or tripled (2). Therefore, control of respiration may be achieved by an adequate temperature management (3).

The objective of this study was to evaluate the influence of temperature and cutting on orange respiration rate. This work was conducted on seedless oranges of a Regional variety from the north of Portugal (Felgueiras). The experimental work was performed with whole and fresh-cut oranges stored at 4 °C, and room temperature (19-20 °C). Respiration rate was higher at higher temperature for both whole and fresh-cut oranges. Fresh-cut orange presents a higher respiration rate than whole orange. However the differences were significative only at room temperature.

The data obtained may be used in the project of modified packages for the fresh-cut orange.

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### References

- (1) Geeson J. (1990). "Packaging to Keep Produce Fresh", Nutrition and Food Science, March/April, 2-4.
- (2) Hardenburg R.E.; A.E. Watada; C.Y. Wang (1986). "The Commercial Storage of Fruits, Vegetables, Florist and Nursery Stocks", USDA Agric. Hndb. no.66.
- (3) Jurin V.; M. Karel (1963). "Studies on Control of Respiration of McIntosh Apples by Packaging Methods", Food Techonology, June, 104-108.
- (4) Kader A.A. (1987). "Respiration and Gas Exchange of Vegetables", in Postharvest Physiology of Vegetables, Edited by J. Weichmann, New York.
- (5) Rosen J.C.; A.A. Kader (1989). "Postharvest Physiology and Quality Maintenance of Sliced Pear and Strawberries Fruits", Jounal of Food Science, 54(3) 656-659.