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TEMPERATURE EFFECT ON STORED TOMATO (*LYCOPERSICUM ESCULENTUM L.*) QUALITY PARAMETERS

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Tomatoes (*Lycopersicum esculentum* L.) are a relevant fruit in Mediterranean diet with potential benefits to human health and well-being, due to their richness in antioxidants compounds, namely carotenoids (especially lycopene), phenolic composition and vitamin C. To slow fruits and vegetables respiratory metabolism, biochemical changes, microbial development and hence extending their shelf life, storage at low-temperatures are applied. However, limited information is available about the overall implications of different storage conditions on tomato quality.

The aim of the present work was to evaluate temperature (2ºC; 5ºC; 10ºC; 15ºC; 20ºC) effects on tomato quality attributes, such as colour (CIELab parameters, hue), texture [Maximum force (N)], weight loss (%), titratable acidity (g acid citric.100g^{-1}) and total phenolics content (TPC, mGAE.100g^{-1}) during storage, and determine the optimal storage conditions for its preservation.

Tomato colour and texture quality parameters change significantly ($p<0.05$) during storage at all evaluated temperatures. The tomatoes a* and hue values at day 0 were -9.71 ± 1.06 and 110.67 ± 3.36, respectively. During storage it was observed an increase of a* (≈ 10, 15, 26, 32 and 29 units) and a decrease of hue values (≈ 20, 34, 53, 68 and 69 units) for all temperatures. However, a delay of red colour development was verified on tomatoes stored at low temperature (2ºC, 5ºC and 10ºC). The highest decrease of firmness was verified at 20ºC (reduction of 65%) and the lowest at 5ºC and 10ºC (reduction of 27% and 40%, respectively). In general, a progressively increase loss of weight, with temperature and time of storage, was observed. Stored tomatoes at low temperature (2ºC and 5ºC) denoted a decrease in titratable acidity (≈ 0.2 g acid citric.100g^{-1}). Tomatoes TPC was increased with the temperature and storage period (2ºC – 14%, 5ºC – 29%, 10ºC – 17%, 15ºC – 33% and 20ºC – 25%). This increase, in all stored tomatoes, indicates a source of nutritional benefits due to their antioxidant properties. At 10ºC, 15ºC & 5ºC maintenance of fresh-like quality parameters was observed until the 39th (10ºC) and 30th (15ºC & 5ºC) storage day. Stored tomatoes at 2ºC revealed injury disorders after 11 storage days. On the other hand, tomato stored at 20ºC was kept on camera for only 18 days.

In conclusion, storage temperature of fresh tomato affects all quality attributes as well as its shelf-life and, accordingly, the best storage temperature for quality maintenance and delaying fruit senescence is at 5ºC to 10ºC.

KEYWORDS: Tomato, storage, temperature, quality.