



KINETIC STUDY OF VITAMIN C OXIDATION IN FRESH JUICE OF PÊRA ORANGE (*Citrus sinensis*)

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INTRODUCTION

Vitamin C (ascorbic acid) is an essential nutrient with strong antioxidant properties. It is highly susceptible to oxidation in solution, especially when exposed to heat, as it is thermosensitive, and also light-sensitive.

Its oxidation can be accelerated by the presence of metals such as copper and iron, as well as by alkaline pH, since it is unstable in alkaline conditions and more stable in acidic conditions (Carreiro, D. 2021).

This study aimed to analyze the kinetics of vitamin C oxidation in freshly squeezed orange juice after extraction, quantifying the loss of this essential micronutrient over time due to oxygen exposure.

MATERIAL AND METHODS

The methodology for vitamin C quantification was based on the analytical standards of the Adolfo Lutz Institute. A total of 50 mL of Pêra orange juice (*Citrus sinensis*) was diluted with 50 mL of distilled water. Subsequently, 10 mL of 20% sulfuric acid solution, 1 mL of 10% potassium iodide solution, and 1 mL of 1% starch solution were added. The samples were titrated with a 0.02 M potassium iodate solution until a blue endpoint was observed. The study was conducted using samples exposed to ambient air for 5, 10, 20, 30, 45, 60, and 90 minutes. Vitamin C concentration was calculated based on the volume of iodate consumed during titration, relative to the exposure time to oxygen. All analyses were performed in duplicate,

including a blank sample (Miranda M. 2005). The results indicate that the applied method is effective for the accurate quantification of vitamin C.

RESULTS

The relationship between vitamin C oxidation in orange juice and exposure time to oxygen at room temperature over a 90-minute period showed a slight reduction in the concentration of this micronutrient over time. Immediately after juice preparation, the vitamin C content was measured at 33 mg, decreasing to 28 mg after 90 minutes of exposure.

CONCLUSIONS

The study revealed that, during up to 90 minutes of oxygen exposure at room temperature, there was only a slight loss of vitamin C in the orange juice. These results suggest that, over short exposure periods, vitamin C oxidation is minimal, indicating a certain degree of stability of the micronutrient within this timeframe. However, further studies are needed to investigate the effects of longer exposure periods and other environmental conditions, such as temperature and light exposure.

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