

INFLUENCE OF MODIFIED ATMOSPHERES PACKAGING, ANTIOXIDANTS AND MILD HEAT TREATMENT ON THE SHELF LIFE OF FRESH-CUT EGGPLANT (*SOLANUM MELONGENA*)

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INTRODUCTION & AIM

Eggplant consumption has increased in recent years due to a growing interest in healthy and nutritious diets, due to its phytochemical and antioxidant content, which are beneficial to human health.

Eggplants to be processed as fresh-cut vegetables must undergo some treatment to delay enzymatic browning, which occurs rapidly after cutting, reducing their sensory acceptability.

In this study, the influence of passive and active modified atmosphere packaging (MAP), antioxidants (A1: Ascorbic acid 1% and A2: Citric acid 1%) and their combinations with a mild thermal process on the shelf life of cut eggplants was evaluated.

METHOD

- Eggplant slices (Black nite variety, obtained in Santiago del Estero, Argentina) 1 cm thick were subjected to different treatments:

a- MAP (packaged with 35 μm polypropylene);

b- MAP1: packaged with 3% O_2 + 15% CO_2 ;

c- MAP2: packaged with 5% O_2 + 15% CO_2 ;

d- A1 + MAP;

e- A2 + MAP;

f- A1 + MAP1;

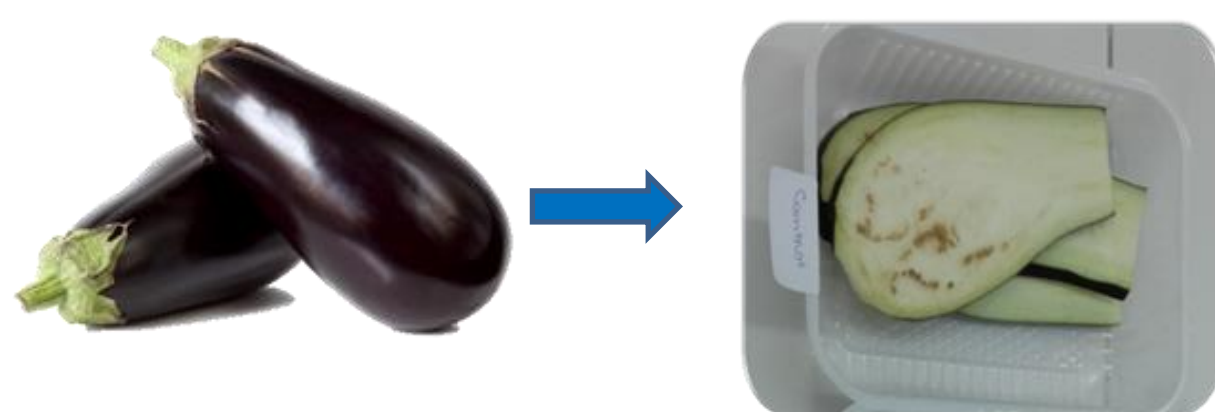
g- TT (heat treatment with water at 50°C for 1 min) + A1 + MAP;

h-TT + A1 + MAP1;

i- Control (no treatment).

- Fifteen trays of each treatment were stored for 12 days at 5°C, and the evolution of the following parameters was periodically determined:

Sensory characteristics (with a trained panel); **color** (with a colorimeter, determining L^* , a^* and b^*) and **browning index (BI)**; **ascorbic acid**, **total phenols (TP)**, **antiradical capacity (AC)**, **count of marker microorganisms** (mesophilic and psychrophilic aerobes, enterobacteria and molds and yeasts) and activity of enzymes involved in enzymatic browning were periodically evaluated.



RESULTS & DISCUSSION

The main factors limiting shelf life of fresh cut eggplant were:

- **general appearance**,
- **color**,
- **browning index**,
- **ascorbic acid evolution**.

In all treatments, the microorganism count was always below 10^7 CFU/g (acceptability limit) during storage, except in the control.

The figure shows an image of eggplants with treatment h: TT + A1 + MAP1, after 10 days of refrigerated storage.



- **Treatment h** was the most effective in prolonging the shelf life of eggplants, maintaining their optimal sensory characteristics for up to 10 days, with values of 7.4 ± 0.6 of general appearance.

- **BI** of treatment h was 22.24 ± 1.6 at 10 days of storage.

- This treatment presented the greater retention of:

AA and **CA** (approximately 64% and 70%, from the start of storage, respectively).

-No significant changes were observed in the initial FT level (1.5 ± 0.1 Eq. chlorogenic acid. kg^{-1}) and PPO enzymatic activity, presenting at the end of storage levels of 2.8 ± 0.4 UEA. mg^{-1} protein.

UEA: (unit of enzyme activity) was defined as the amount of extract that produces an absorbance change of 0.001 units per min under assay conditions)

CONCLUSION

With the combined technologies of h treatment it was possible to extend the shelf life of fresh cut eggplants up to 10 days.

FUTURE WORK / REFERENCES

Studies will continue using combined technologies to extend the shelf life of freshly cut eggplant.