



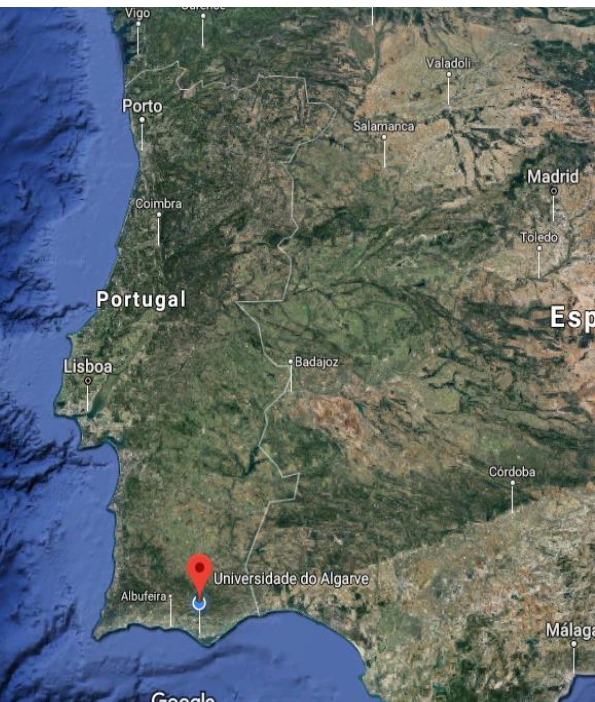
The effect of active packaging enriched with Citral, Eugenol and Alginate on the storage of 'Strawberry Festival' strawberry fruits

Cristino Dores

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Universidade do Algarve – Faculdade de Ciências e Tecnologia

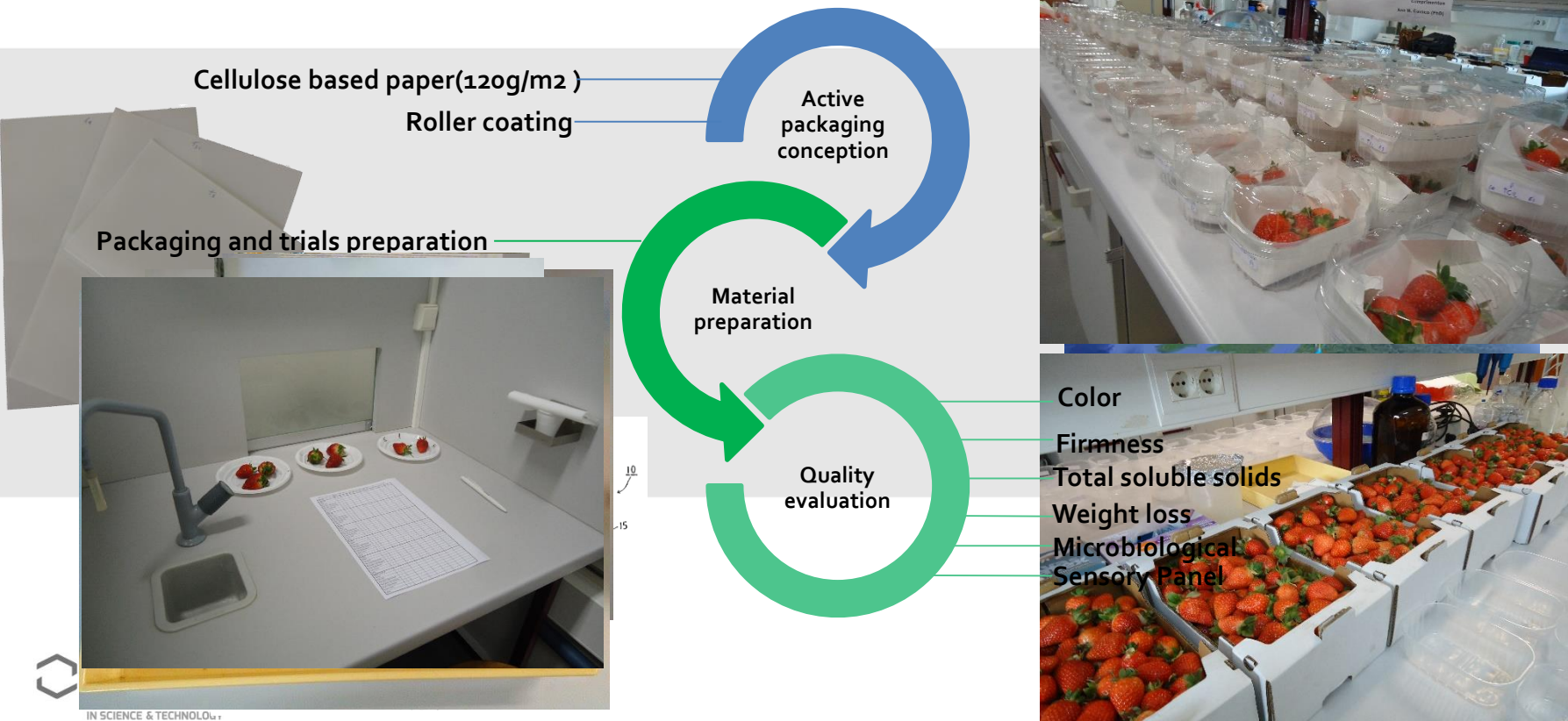
Post-harvest Research Laboratory



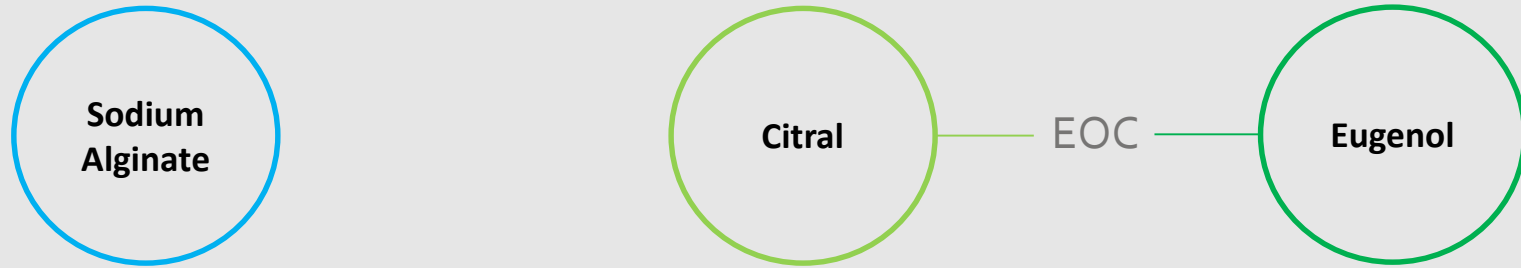
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Introduction

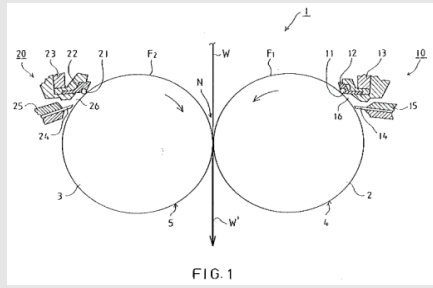


Introduction



Material&Methods

- AP preparation



Solutions Preparation

Alginate 1 and 2% + EOC + Distilled water

Incorporation

Rolling the paper sheets through a size press at a pressure of 15kg/cm² containing the previous solutions

Drying

Drying the active paper sheets at 100°C using a hot press or at room temperature in presence of EOC

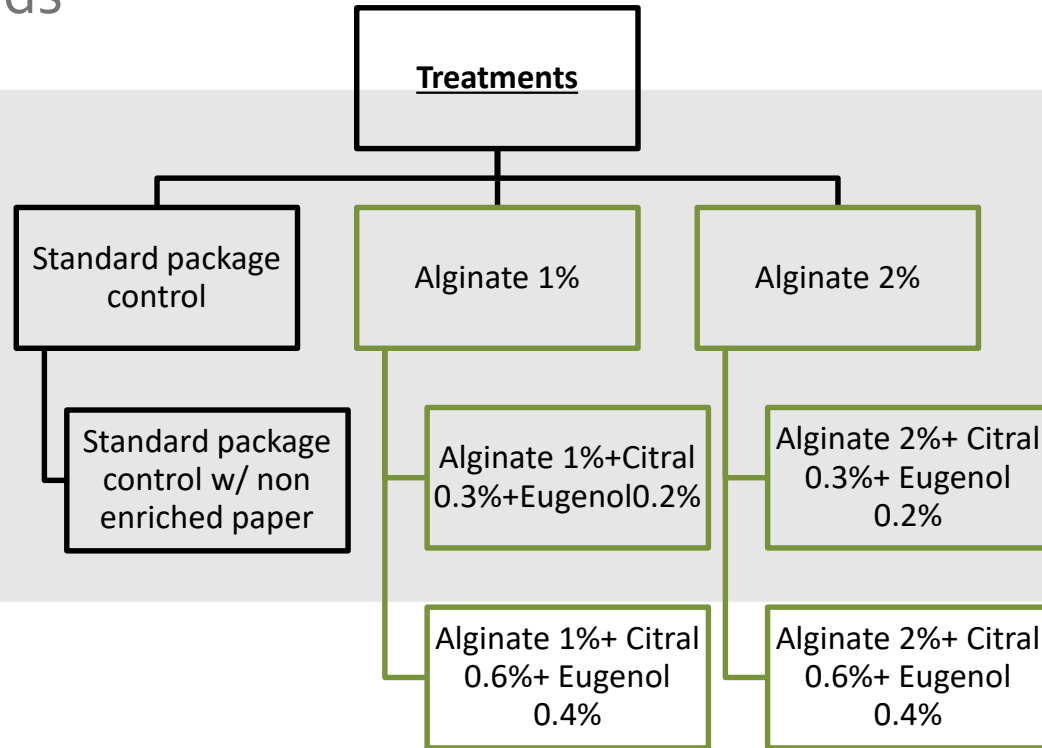
Packaging

Cover the bottom and sides of Standard strawberry packages with the active paper

Material&Methods

- Strawberry (*fragaria x ananassa*) cv Strawberry Festival
- Packaging preparation
- 8 Packages(6 AP and 2 controls)
- 0,7,10,14 days
- Quality evaluation: color; firmness; weight loss (%) ; microbial content; total soluble solids; anthocyanins; sensory panel

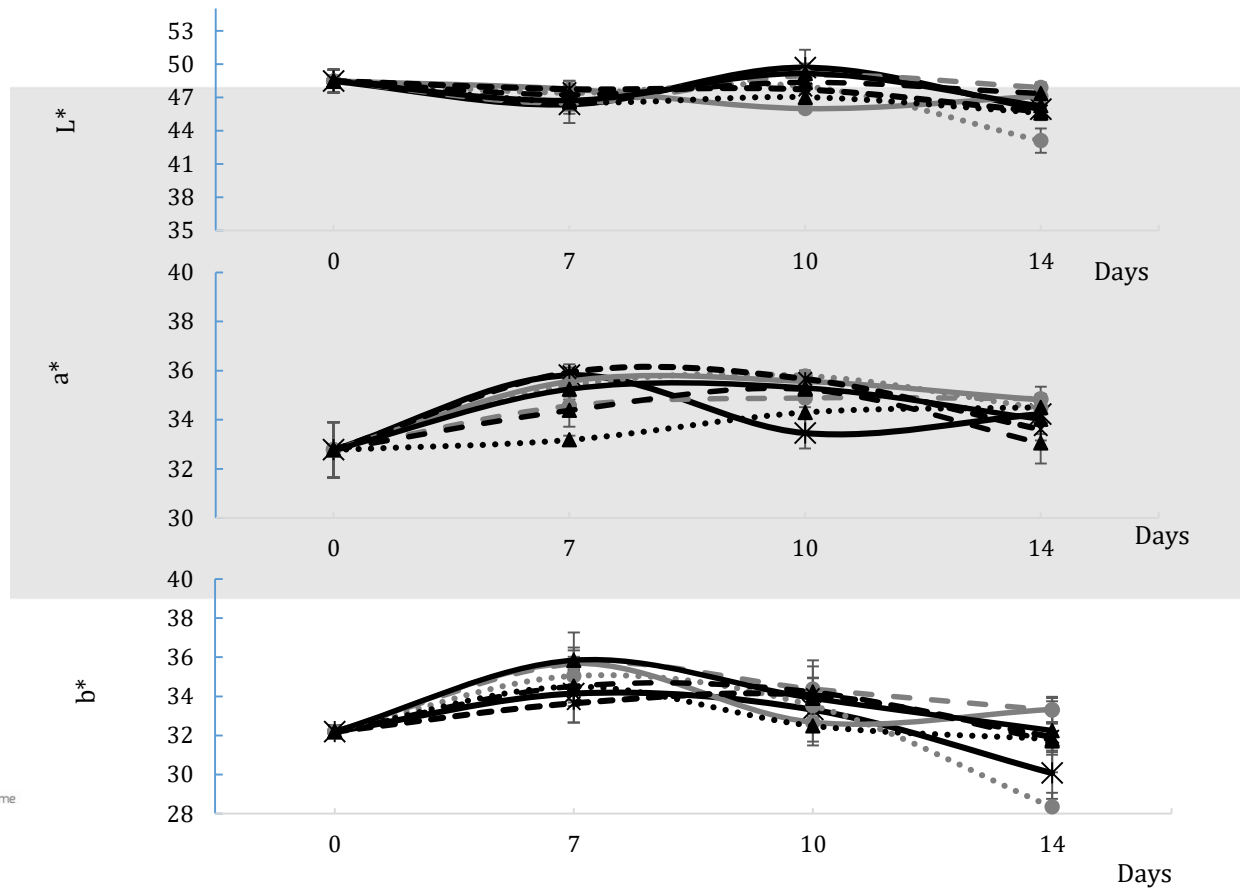
Material&Methods



Results

Chapter IV treatments

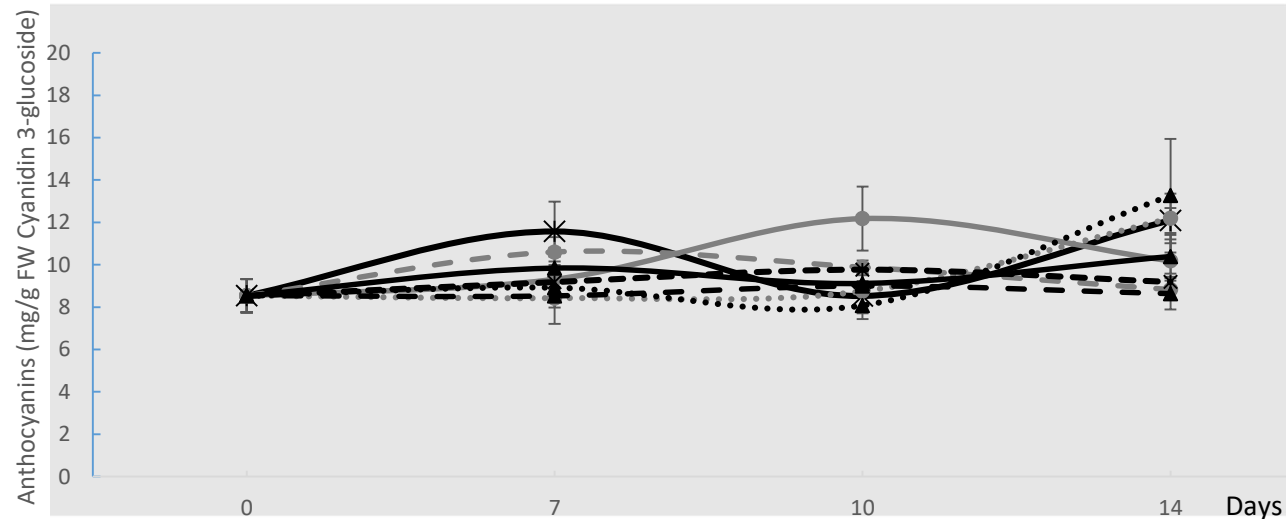
- *— Standard package control
- Alg.1%+Ci.0,3%+Eu.0,2%
- ▲- Alg.2%
- ...▲... Alg.2%+Ci.0,6%+Eu.0,4%
- Alg.1%
- ...●... Alg.1%+Ci.0,6%+Eu.0,4%
- ▲- Alg.2%+Ci.0,3%+Eu.0,2%
- *-- Standard package control with non-enriched paper.



Results

Chapter IV treatments

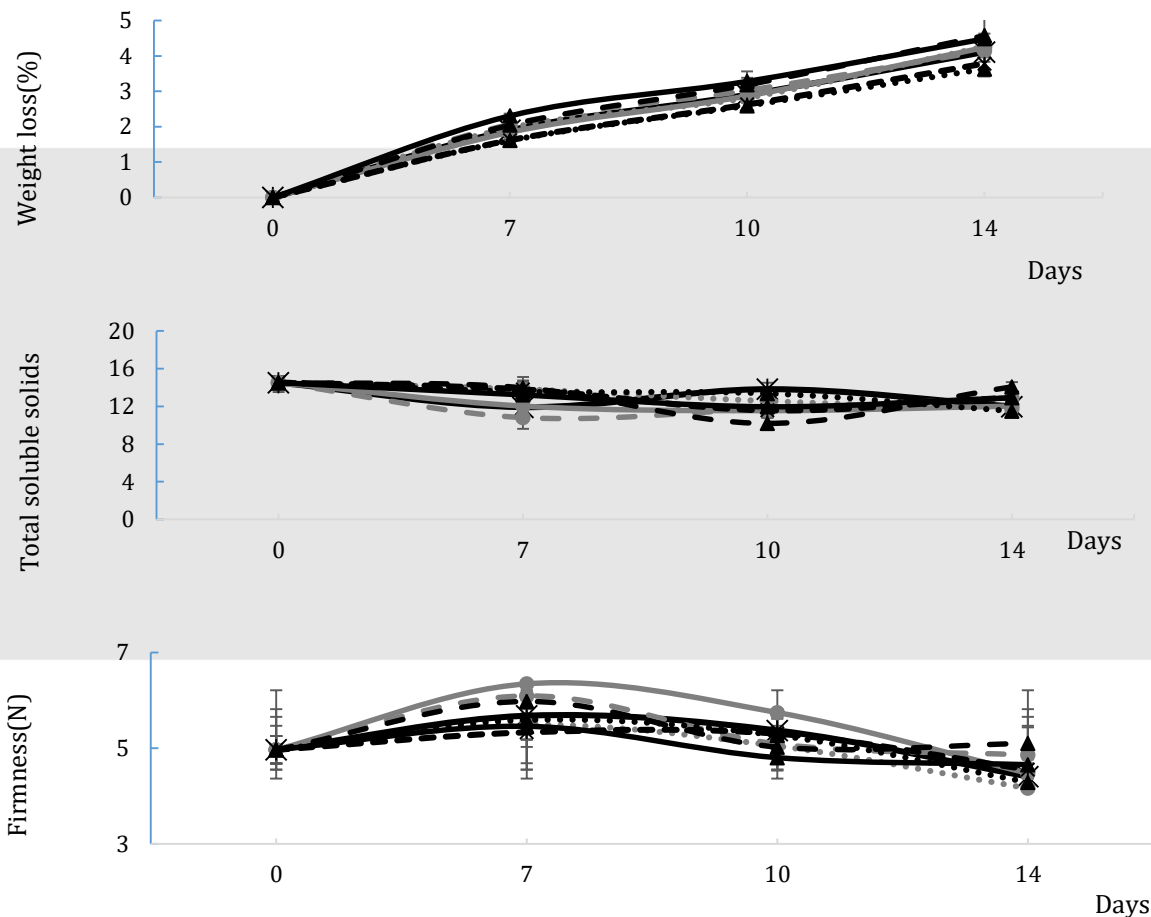
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Results

Chapter IV treatments

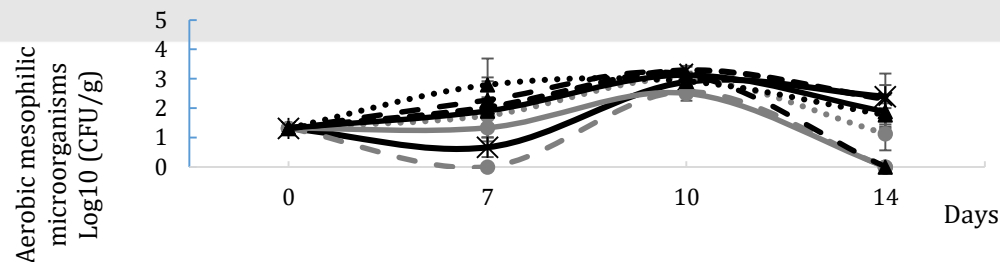
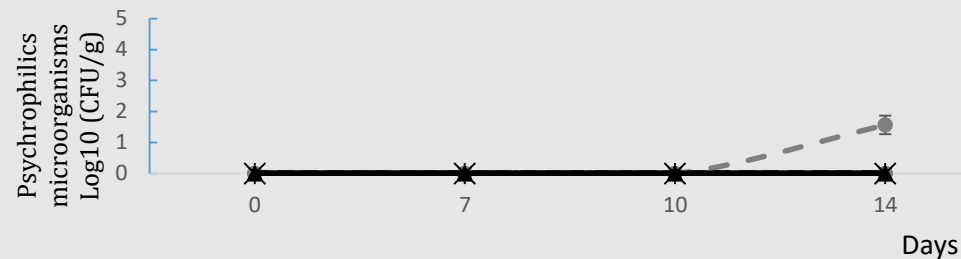
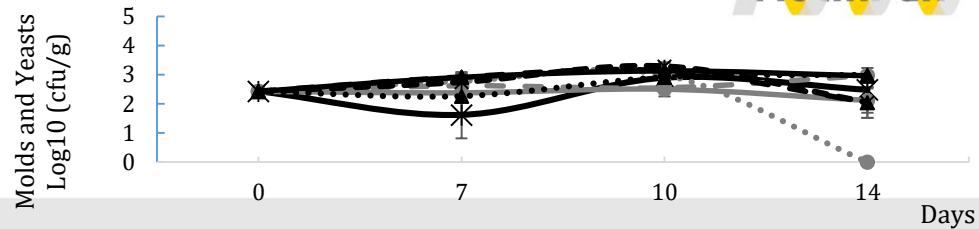
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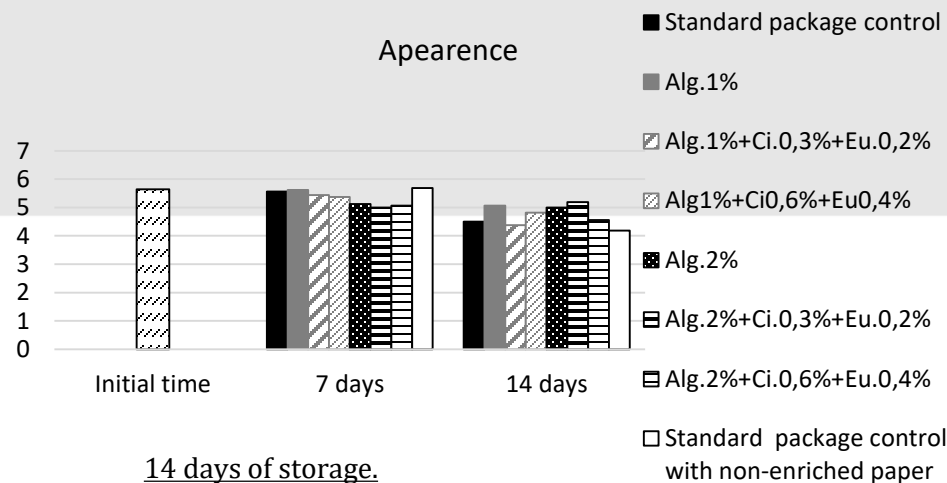
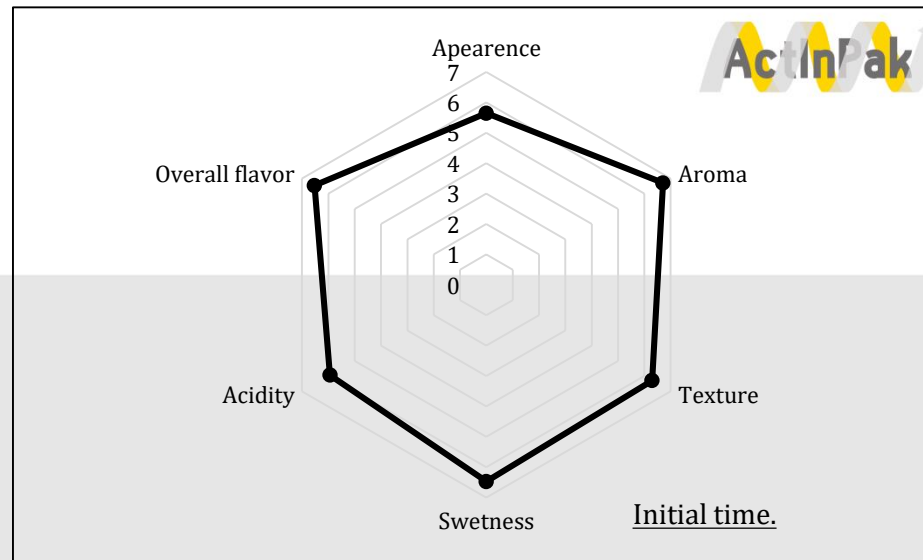
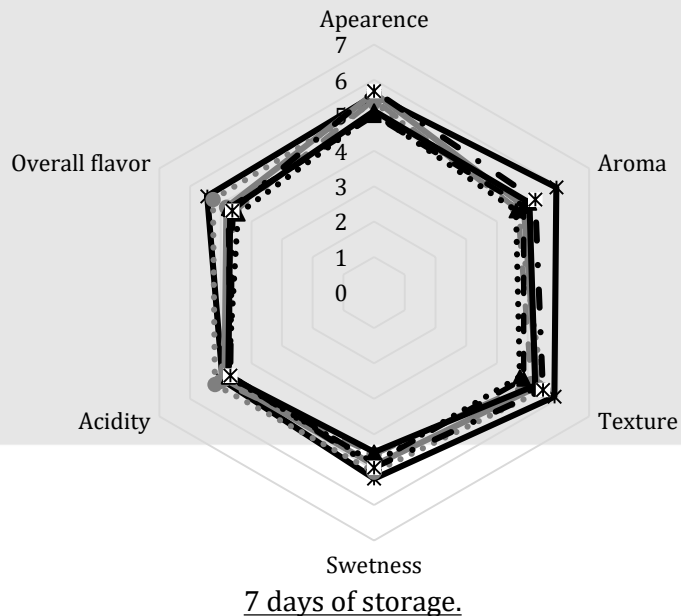
Results

Chapter IV treatments

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- ▲— Alg.2%
- ...▲... Alg.2%+Ci.0,6%+Eu.0,4%
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- ...●... Alg.1%+Ci.0,6%+Eu.0,4%
- ▲— Alg.2%+Ci.0,3%+Eu.0,2%
- *— Standard package control with non-enriched paper.



- *— Standard package control 7 days
- Alg.1% 7 days
- Alg.1%+Ci.0,3%+Eu.0,2% 7 days
- Alg.1%+Ci.0,6%+Eu.0,4% 7 days
- ▲— Alg.2% 7 days
- ▲— Alg.2%+Ci.0,3%+Eu.0,2% 7 days
- Alg.2%+Ci.0,6%+Eu.0,4% 7 days
- *— • Standard package control with non-enriched paper 7 days



Conclusions

- Fresh strawberries could be stored for at least 14 days maintaining good quality
- AP with alginate and essential oils combined showed less aerobic mesophilic bacteria growth
- Good acceptance of the fruit by the panellists for up to 14 days of storage
- Although there were no significant differences among active packaging, for most quality parameters, as generally, their perform was in most cases better than control
- The effect of AP was not so evident because stored fruit were healthy selected fruit

Future perspectives

What can we do to improve?

- New active compounds and formulations based on the tested ones can also be improved, developed and tested
- Testing the volatilization rate of the compounds on the paper through time
- A better preservation method allowing companies to have a stock of active packaging with the same quality that they had in the moment of bought.

What can we do to adapt?

- Adapt our technology to the companies
- Prove them why they should use our technology
- Economically feasible products

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