# EFFECT OF DIFFERENT SALT CONCENTRATION ON THE PHYSICAL PROPERTIES OF FROZEN THAWED EGG YOLK

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## Introduction

- Processed egg products, such as separated, homogenized and pasteurized liquid egg products, are generally used for industrial purposes.
- Liquid egg yolk (LEY) is a popular ingredient in the food industry due to its excellent gelling, emulsifying, colouring and coagulating properties, high nutritional value and unique organoleptic properties.
- Freezing is a traditional physical preservation process that can increase the shelf life, but the egg yolk undergoes an irreversible fluid loss, when it is frozen at -6°C or a lower temperature, it leads to a gelation process.
- In industrial practice, antigelation agents, such as the addition of 10% salt or sugar is currently preferred to reduce the degree of gelation.
- Researchers found that the addition of 5% salt resulted in a less hard texture than the addition of 10% (MA ET AL., 2021; PRIMACELLA ET AL., 2018).

## Materials and methods

- Raw material
  - –Pasteurized liquid egg yolk: broken, filtered and homogenised under industrial conditions
- Sample preparation:
  - –3 different salt concentration (4%, 5% and 6%) + control sample
- Treatment:
  - – freezing at -18 °C for 28 days (measurement: before freezing, day 14 and 28 after freezing, thawing: 4 °C, 24 h)

pH measurement:
4 °C
triplicate

Colour measurement:
4 °C
5 times

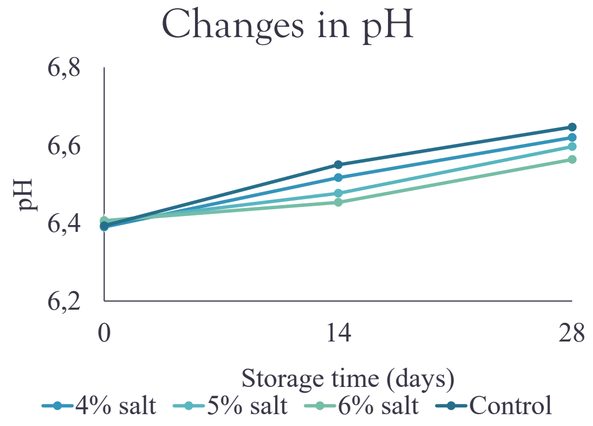
Rheological measurement:
4 °C
10 times
Back-extrusion rheology
Measurement speed: 1 mm/s

## Conclusion

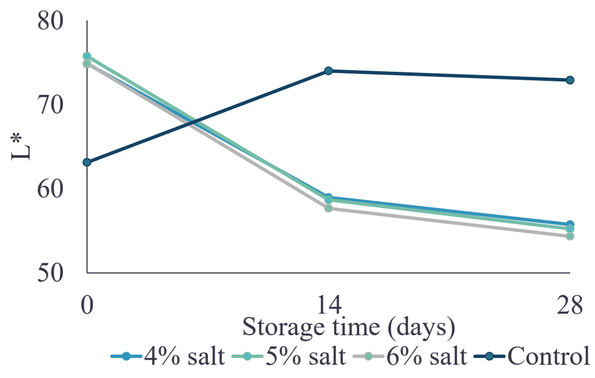
- NaCl treatment caused several changes in physical properties of LEY.
- NaCl could help to prevent the gelation after freezing.
- The results presented in this study showed that salt treatment greatly influenced firmess, consistency, cohesiveness and viscosity index of frozen-thawed egg yolk.
- Addition of 5 or 6% of NaCl could decrease protein aggregation induced by freezing.

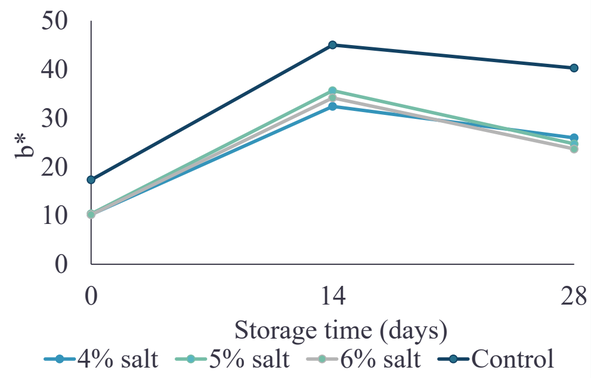
## Results


Changes in pH

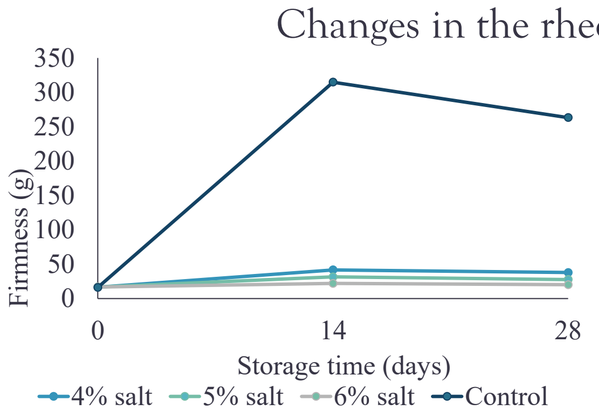


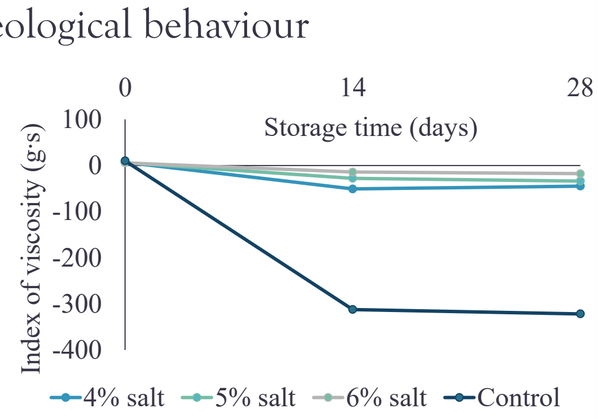

Changes in colour parameters




Changes in the rheological behaviour

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