

The background of the slide is a photograph of several brown and white eggs in a nest made of straw. Some eggs are in a cardboard egg carton on the left, while others are scattered in the straw. A blue feather is visible on the right side of the nest.

# The Effect of Adding Powdered Whey Protein on Liquid Whole Egg Properties

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# Liquid Whole Eggs

- Eggs are known to be a great source of protein with low cost. One egg can provide an average of 75 kcal, and between 6-7 grams of highly digestible protein.
- Egg products are widely used in Europe, it represents 20% of total consumption as they are easier to handle and safer to consume with longer shelf life due to pasteurization of the product before packaging.

## EGG LIQUIDS



Pasteurized  
whole egg liquid



Pasteurized  
egg-yolk liquid



Pasteurized  
egg-white liquid



Spec'11 pasteurized  
whole egg liquid

# Whey Protein

- Whey is the liquid remaining after milk has been curdled and strained. It is a byproduct of the manufacturing of cheese or casein and has several commercial uses.
- Whey protein and its bioactive components have been shown to result in greater health benefits compared with other protein sources such as casein and egg.
- Whey proteins are also known as a rich source of protein that is high in essential amino acids and bioactive peptides that can help in the management of chronic diseases.

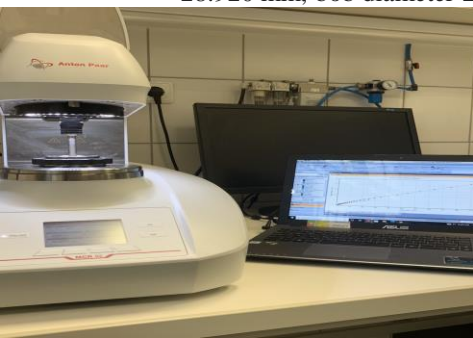


# Study Objective

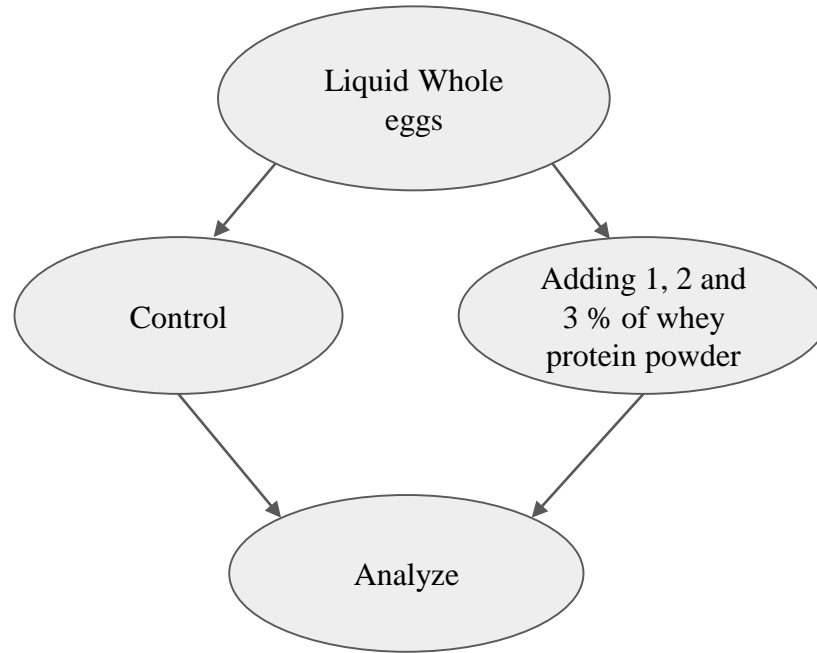
- Evaluate the physical and chemical properties of liquid whole egg (LWE) after adding different percentage of Whey protein.
- Create new egg product with higher protein content.

# Materials and Methods

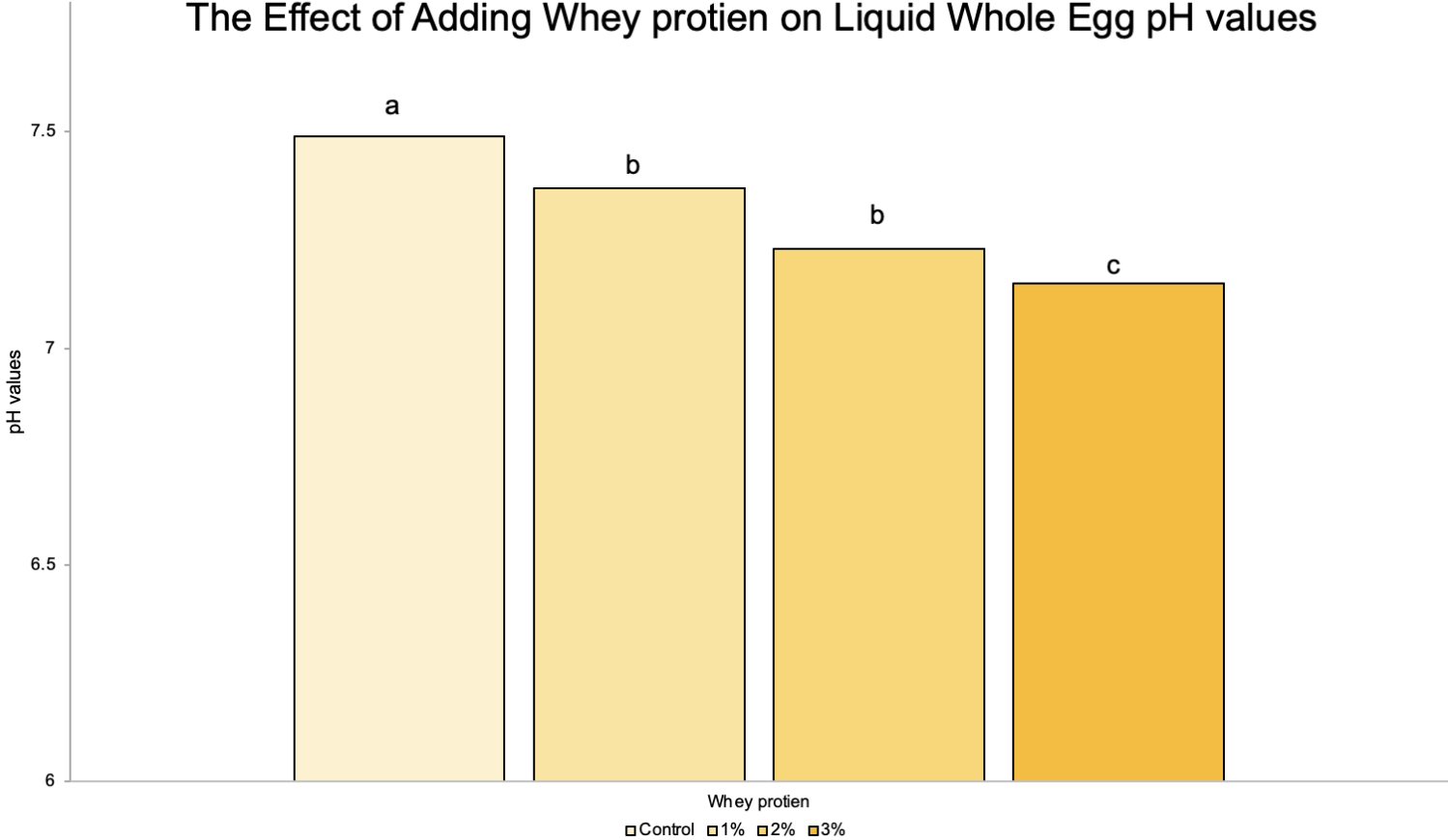
- **Samples:** raw homogenized liquid whole egg was obtained from a liquid egg plant (Capriovus Ltd., Szigetcsép, Hungary)
- **pH Measurements:** The pH was measured at 4 °C using a portable digital pH meter (206-pH2, Testo SE & Co. KGaA, Titisee-Neustadt, Germany) in triplicate.
- **Color Measurements:** Tristimulus color measurements were performed with a Konica-Minolta CR-410 chromameter (Konica Minolta Sensing Inc., Osaka, Japan) using CIELAB system where  $L^*$  is lightness (black point  $L^* = 0$ , white point:  $L^* = 100$ ),  $a^*$  is characteristic to red-green color ( $+a^*$  red,  $-a^*$  green), and  $b^*$  is the blue yellow color ( $+b^*$  yellow,  $-b^*$  blue at 4 °C. Measurements were performed five times.
- **Viscosity Measurements:** Examination of the rheological behavior of liquid whole egg and liquid egg white was performed by MCR 92 rheometer (Anton Paar, Les Ulis, France) in rotational mode equipped with a concentric cylinder with a concentric cylinder (cup diameter 28.920 mm, bob diameter 26.651 mm, bob length 40.003 mm, active length 120.2 mm, positioning length 72.5 mm).



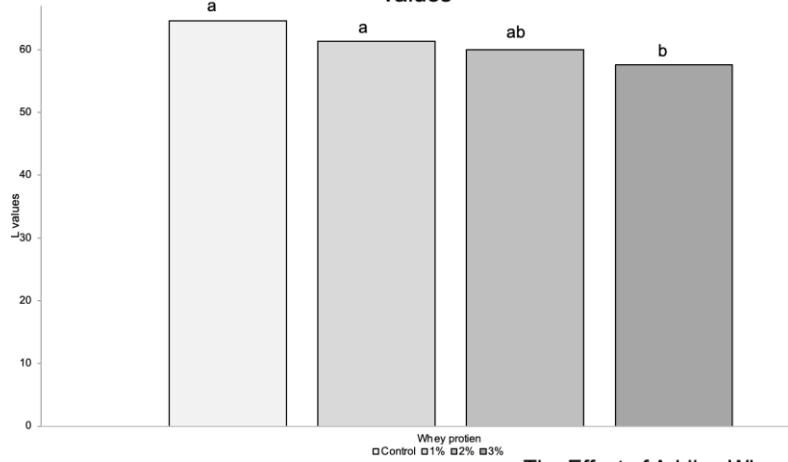
# Materials and Methods



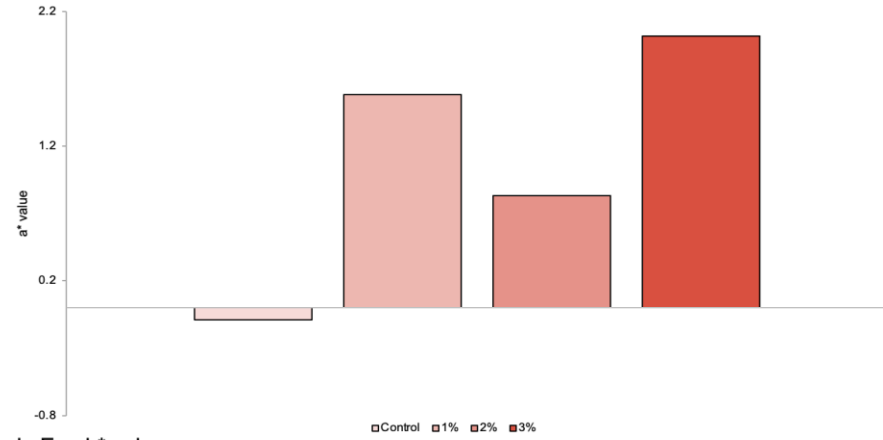
# The Effect of Adding Whey protien on Liquid Whole Egg pH values



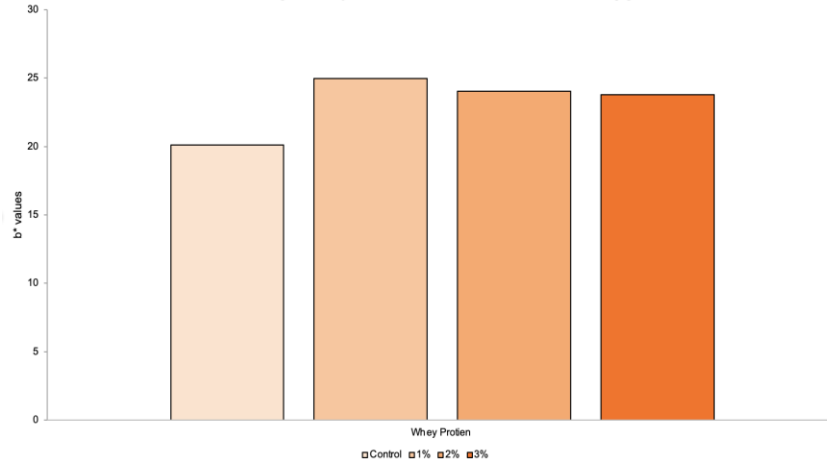
The Effect of Adding whey protiens on Liquid Whole Egg L\* values



The Effect of Adding Whey protien on Liquid Whole Egg a\* values

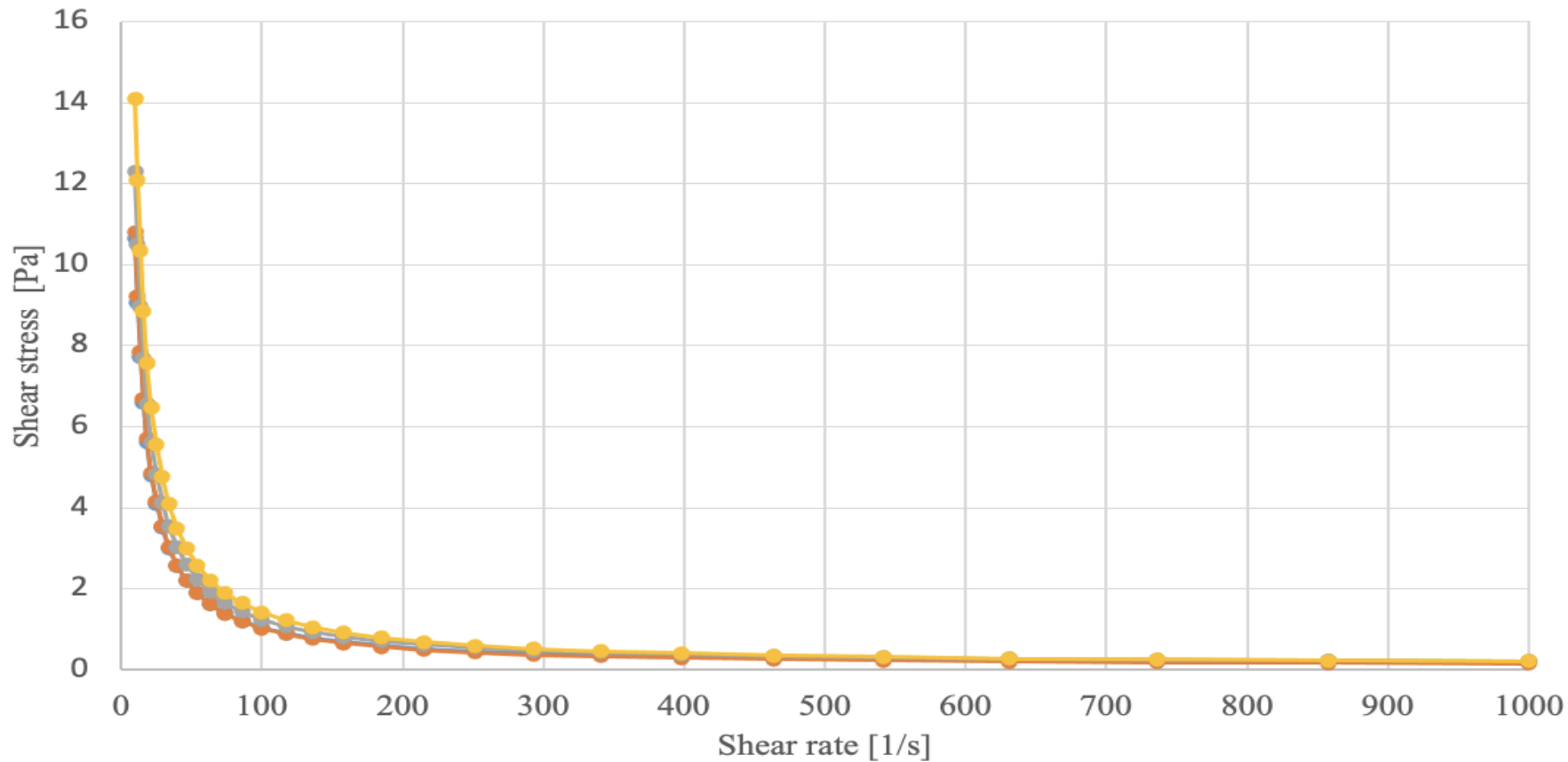


The Effect of Adding Whey protien on Liquid Whole Egg b\* values





The Effect of Adding Whey Protein on LWE Flow Curve



—●— control group    —●— whey 1%    —●— whey 2%    —●— whey 3%



Thank You