

IMPACT OF CITRIC ACID AND HEAT TREATMENT ON RHEOLOGICAL PROPERTIES OF WHOLE LIQUID EGG

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Abstract

As it is known, eggs and its products are very perishable food because of their high content on nutrient such as proteins. The extending shelf-life of egg products by heat treatment is the aim of many studies, they proved that the heat treatment affects the egg protein and causes its damage. The objective of this study is to investigate the impact of the citric acid addition to whole liquid egg before the heat treatment to decrease its effect on the egg protein. In fact, the damaged protein decreases the viscosity of liquid eggs.

Different pH of whole liquid egg are obtained (5, 5.5... 7) by adding citric acid. Then, they are packed and heat treated at a water bath (70 °C for approximately 3 minutes). For each pH, we measured the pH and the viscosity of whole liquid egg. The viscosity measurements were performed with Physica MCR 51 (Anton Paar Hungary) rotation viscometer, by a measurement system comprising CC 27 (cylinder with 27 mm) measuring body and ST 24 2V-2V-2D measuring head. Viscosity of sample solutions was tested with 600 1/s deformation rate at 15 °C.

The impact of the citric acid and the heat treatment is obvious in the samples compared to the raw egg. During the storage period, the pH value of treated liquid whole egg didn't change apparently. While from the 4th day of storage, we can notice that the pH of raw egg is decreased. From the first day of treatment, we can observe that the viscosity of treated liquid egg is higher than the raw one.

The addition of citric acid to the liquid egg maintains their properties during the storage.

Key words: Citric Acid, Whole Egg, Viscosity.