

Changes in liquid egg white caused by different combinations of heat and HHP treatment

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Introduction

Preservation of egg products means still a challenge for the food industry: on the one hand, microbiological safe products must be produced, on the other hand techno-functional characteristic should be preserved of egg. Development of emerging technologies led to accomplish both aims. In our experiment, heat treatment and high hydrostatic pressure (HHP) are combined in several ways applying a central composite design.

Materials and methods

Raw liquid egg white (LEW) was taken from production of Capriovus Ltd. Samples were first heat treated, than HHP treated temperatures and pressure ranges were calculated according to a central composite design between 53 and 67°C and 330 and 470 MPa, holding time of heat treatment was 12 minutes and 5 minutes of HHP.

Colour of treated samples was measured by Minolta Cr 400 colorimeter and protein denaturation is observed by differential scanning calorimetry (Micro DSC III). Viscosity of samples was measured by Anton Paar MCR 92 rheometer applying shear rate between 10 and 1000 1/s. Results were evaluated using the experiment design.

Results and discussion

The colour of samples were highly influenced by the temperature of heat treatment, as long the pressure of HHP caused significant changes in viscosity of LEW. Ratio of desaturated proteins was mostly influenced by the temperature of heat treatment.

Conclusions

Our results shows that LEW's functional properties are different influenced by HHP and heat treatment, but an appropriate combination of both treatments results LEW with great functional quality.

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