



Effect of high pressure in combination with various ingredients on properties of chicken meat based products

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Summary

Protein changes during high pressure processing is inevitable. This study helps to understand the changes in physico-chemical properties of proteins with or without additives (β -glucan, microbial transglutaminase (MTGase), salt, phosphates) during high pressure processing of chicken meat batters.

Problem

High pressure processing is a potential tool for the food industry because of its ability to modify functional properties which have bearing on food texture, without any compromise in the destruction of microorganisms.

The present investigation is intended to prepare new products from chicken breast meat using high pressure processing.

The major objectives of the study are:

- 1) To investigate the effect of β -glucans on the textural properties of high pressure processed products
- 2) To utilize MTGase to enhance the textural properties of products with less salt and without phosphate additives
- 3) To determine the effect of processing on the physico-chemical parameters of chicken meat batters
- 4) To understand the interaction of various components in the batters during high pressure processing by microscopy

Our Approach

Batters will be prepared as given in the flow diagram. For samples with MTGase, pressure will be restricted to 200 and 400 MPa with temperature of 20°C and 40°C. For these treatments, the final product temperature will be raised to 75°C for 5 minutes in order to inactivate the enzyme

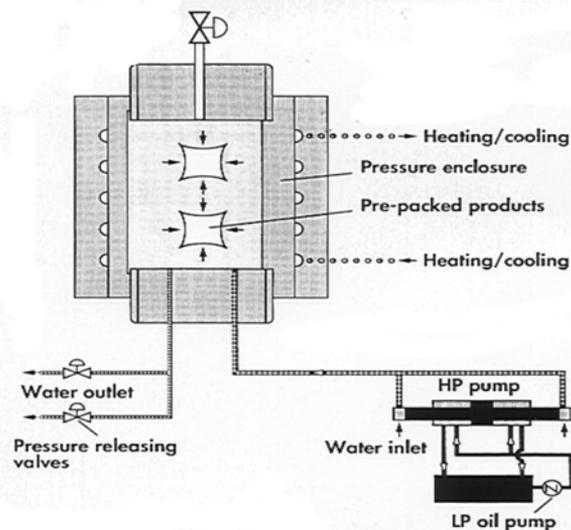
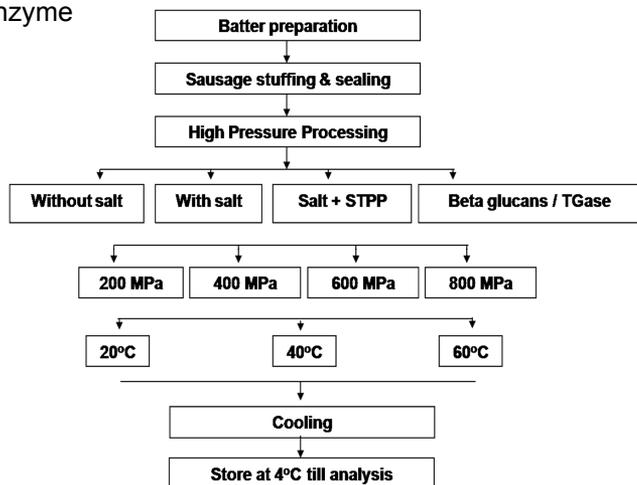


Figure 1. Schematic representation of high pressure processing technology

Our Observations

High pressure processing of chicken meat with β -glucan may result in novel food products with desired texture, which contains less fat, since β -glucan is a fat replacer in functional foods.

Addition of transglutaminase enzyme will enhance gel formation even at low temperatures. If the product can achieve desired textural properties due to pressure induced gelation even at low temperatures, the findings will result in preparation of new chicken meat products with less salt, without phosphates and without any loss in the nutritional qualities.

What does this mean?

The quantity of salt used in food processing, which is a major health concern, will be reduced while retaining the textural properties of the product. The use of phosphates will also be completely avoided, since high pressure processing can aid in water retention. Since the process involves less heat, nutrients will be preserved as well.

Acknowledgements

The project was supported by the funding from from Alberta Livestock and Meat Agency (ALMA)

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