Our Observations

New Emerging Technologies for Improving Poultry Meat Quality: Effect of High Pressure Processing on Chicken Meat Protein Gel Formation

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Summary

High pressure processing (HPP) is one of the most promising food technologies with practical implications in meat processing. It is important to understand the modifications of proteins induced by high pressure treatment. This study will result in the determination of the optimal combinations of pressure and temperature to induce protein gel formation in chicken meat batters.

Problem

One of the challenges in the production of further processed meat products is the utilization of PSE (pale, soft, exudative) and DFD (dark, firm, dry) meat (Figure 2). Raw breast meat color is related to muscle pH and functional properties in poultry meat. PSE meat costs the U.S. poultry industry at least $30 million/year due to reduced protein functionality in further processed products. DFD meat is not a major issue in processing, however; it appears darker in color. The present investigation is intended to restore and/or enhance the gel-forming capacity of poor functional quality meat by using high pressure processing technology.

The major objectives of this study:

1) To investigate the physico-chemical properties of chicken meat proteins extracted from four types of muscles (P. Major muscle, P. Minor muscle, Biceps femoris, wing muscle)
2) To study the differences in the physico-chemical properties of DFD, normal, and PSE chicken breast meat
3) To determine the effect of high pressure processing on protein gel formation in DFD, normal, and PSE chicken breast meat batters

Our Approach

Batters will be prepared for the high pressure processing treatment as shown in Figure 1.

What does this mean?

PSE meat is a major challenge in the poultry industry. High pressure processing is a possible solution to improve the functional properties of poor quality meat and maintain desirable textural properties of further processed meat products. This study will enable the poultry industry in the development and marketing of novel, innovative, value-added meat products.

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