Improving the functionality of mechanically separated turkey meat protein isolates by enzymatic cross-linking using transglutaminase

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Summary

The study was directed to a process for improving the quality of mechanically separated turkey meat (MSTM) protein isolates by treating with transglutaminase (TGase) enzyme. The application of enzymatic treatment has the potential to improve the quality of products prepared from muscle protein isolate.

Observations

**Figure 2.** Combined effect of TGase and NaCl on cooking loss. Results are presented as mean (n=4). SD. Dissimilar letters represent significant (P<0.05) difference.

**Figure 3.** Combined effect of TGase and NaCl on expressible moisture. Results are presented as mean (n=4). SD. Dissimilar letters represent significant (P<0.05) difference.

**Figure 4.** Combined effect of TGase and NaCl on hardness. Results are presented as mean (n=4). SD. Dissimilar letters represent significant (P<0.05) difference.

Results

- Combination of 0.5% of TGase with 2.5% of salt resulted in the lowest level of cooking loss (4.79);
- Great improvement in water holding capacity was found with combination of 0.5% TGase and 2.5% of salt;
- Substantial improvement of textural properties (hardness, springiness, etc.) was achieved with both higher level of TGase and salt;
- Higher amount of TGase and salt resulted in significant improvement of color characteristics of isolated proteins.

Conclusion

The enzymatic treatment with TGase has the potential to improve the functional properties of proteins isolated from MSTM, including textural properties, ability to retain water and color attributes. These properties might be useful in the production of further-processed meat products.

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