



# Extraction of valuable compounds from Mechanically Separated Turkey Meat (MSTM)

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## Summary

An approach to increase the utilization of MSTM is to overcome its compositional problems by extracting and purifying myofibrillar proteins. The new-developed extraction technique also gives the possibility to co-extract other valuable compounds, such as collagen and proteoglycans.

## Problem

The major concerns with the utilization of MSTM for meat product development are: lipid oxidation, color instability and undesirable texture. Therefore, innovative solutions to increase the profitability of MSTM are usually welcomed in the poultry meat industry. One possible strategy would be the separation of valuable components from MSTM (Fig.1). The aim of the study was to develop an efficient technology (Fig.2) to extract proteins and other valuable compounds from MSTM.

## Our Approach

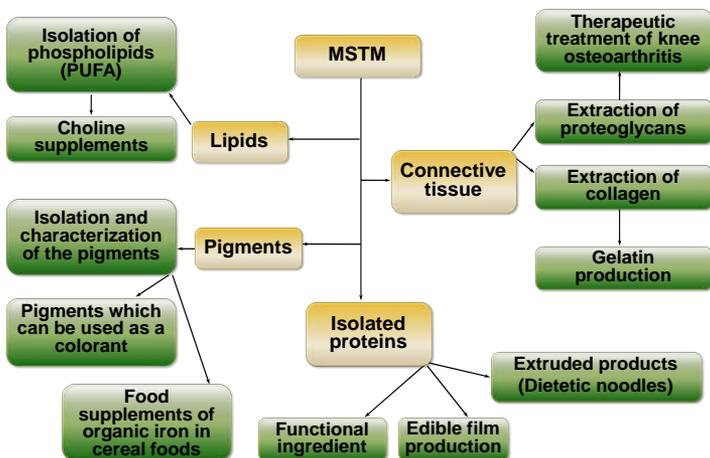


Figure 1. General concept: fractionation

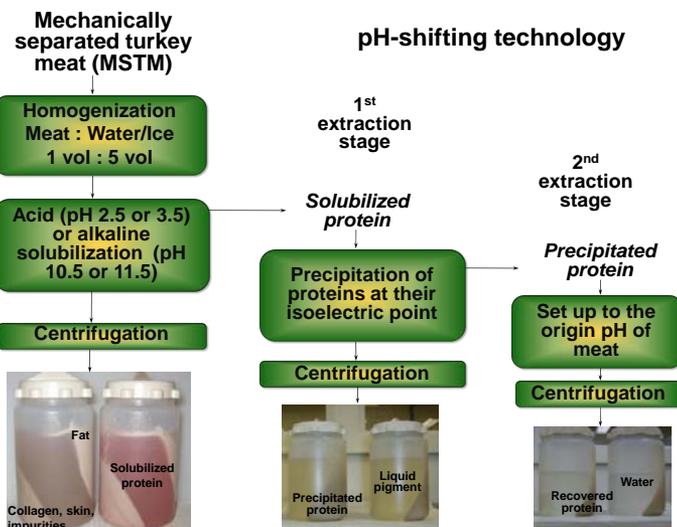


Figure 2. Schematic diagram of the separation process

## Observations

- pH-shifting technology provided relatively high protein yields (57 - 66%);
- Great removal (-92%) of lipids was observed during MSTM protein extractions;
- Evaluation of amino acid composition indicated that this technology did not affect the nutritional quality of isolated proteins;
- Gel forming ability of isolated proteins was improved;
- Substantial removal of pigments (-86.7%) resulted in significant improvement of color characteristics of isolated proteins;
- Emulsifying and foaming characteristics of the isolated proteins were increased after the extraction process.

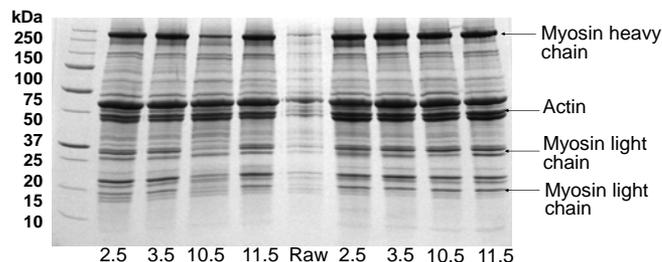


Figure 3. SDS-PAGE profile of proteins extracted from MSTM at different pH of extraction

## Possibilities for co-extraction of collagen and proteoglycans from MSTM

Treatment	Hydroxyproline content in the sediment after 1 <sup>st</sup> centrifugation		Hydroxyproline content in the final protein isolate		Uronic acid content in the sediment after 1 <sup>st</sup> centrifugation		Uronic acid content in the final protein isolate	
Raw MSTM	11.6 <sup>c</sup>	0.8	-	-	1.7 <sup>c</sup>	0.1	-	-
pH 2.5	50.6 <sup>a</sup>	4.0	0.5	0.1	7.6 <sup>a</sup>	0.1	0.5 <sup>b</sup>	0.1
pH 3.5	31.7 <sup>b</sup>	5.2	0.6	0.2	4.3 <sup>b</sup>	0.0	0.4 <sup>b</sup>	0.0
pH 10.5	23.3 <sup>bc</sup>	4.5	0.6	0.3	1.6 <sup>c</sup>	0.2	0.9 <sup>a</sup>	0.0
pH 11.5	59.1 <sup>a</sup>	5.5	0.3	0.1	3.5 <sup>b</sup>	0.5	0.8 <sup>a</sup>	0.1

## Conclusion

The pH-shifting extraction technology has the potential to improve the functional properties of proteins isolated from MSTM; these properties might be useful in the production of further-processed meat products. There is also the possibility to co-extract collagen and proteoglycans from MSTM.

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