



# 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

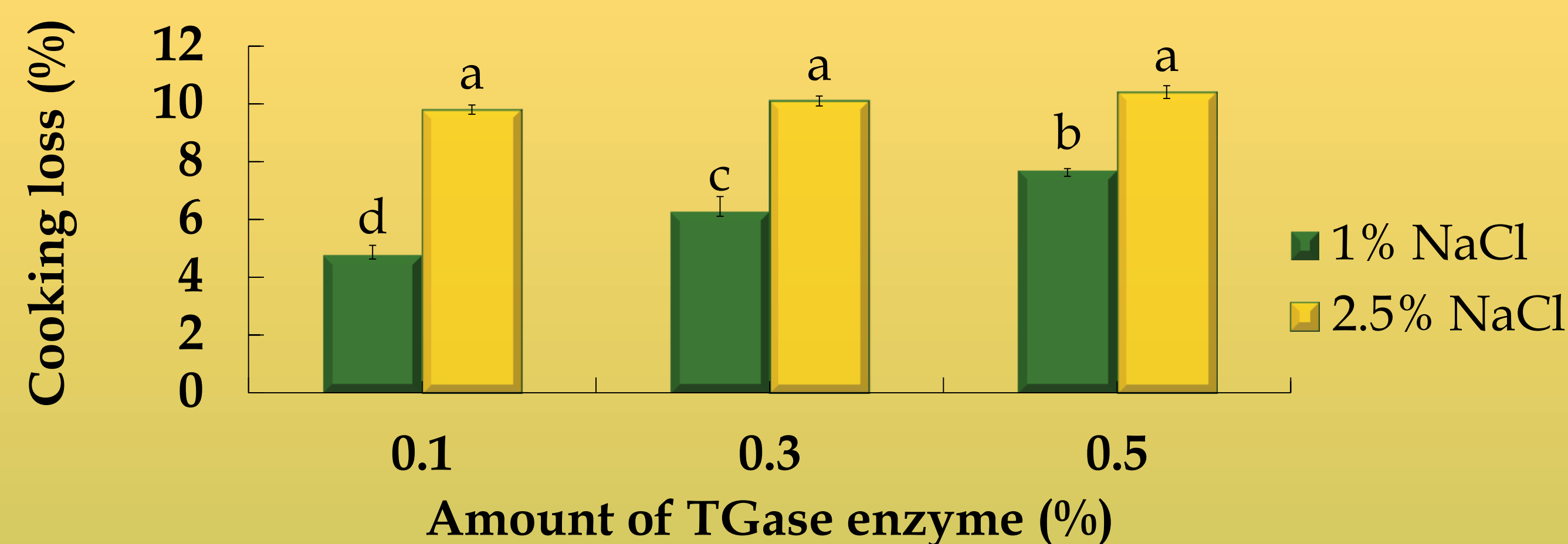


Figure 2. Combined effect of TGase and NaCl on cooking loss. Results are presented as mean (n=4) SD. Dissimilar letters represent significant (P<0.05) difference.

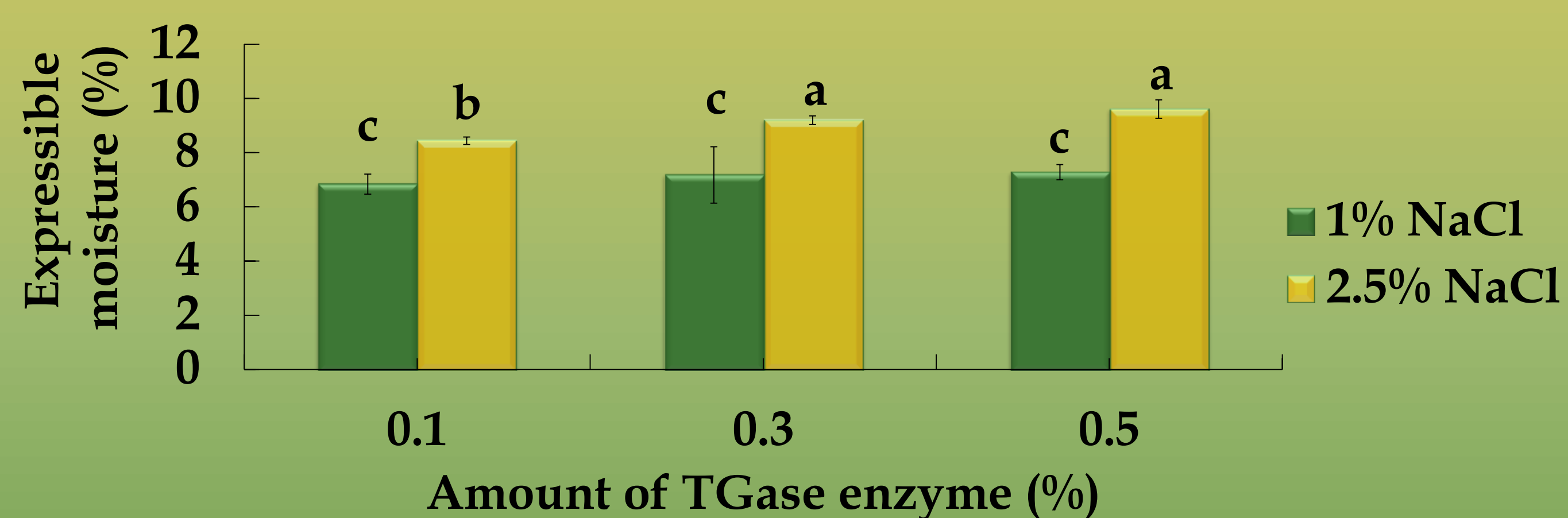


Figure 3. Combined effect of TGase and NaCl on expressible moisture. Results are presented as mean (n=4) SD. Dissimilar letters represent significant (P<0.05) difference.

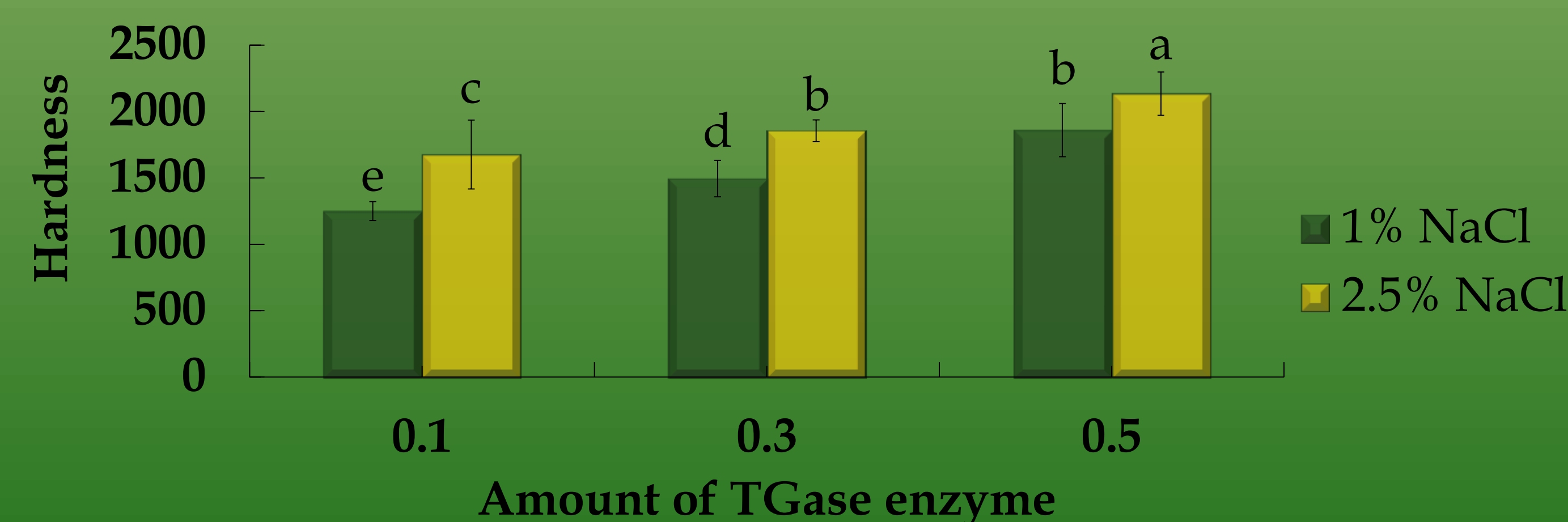


Figure 4. Combined effect of TGase and NaCl on hardness. Results are presented as mean (n=4) SD. Dissimilar letters represent significant (P<0.05) difference.

## Introduction

MSTM protein isolate is a high-protein ingredient obtained by pH-shifting extraction of MSTM. However, during pH-shifting extraction proteins undergo partial denaturation which in turn affects their functionality. A possible solution to increase the functional properties of isolated muscle protein (IMP) is by using enzymatic treatments. TGase is an enzyme that is capable to form the additional covalent cross-links between proteins and widely used as a potential tool to fabricate meat products with better texture. The objective of the study was to investigate the potential ability of enzymatic treatment to increase the functionality of proteins extracted from MSTM.

## 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.

## Contact Information

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## Our approach

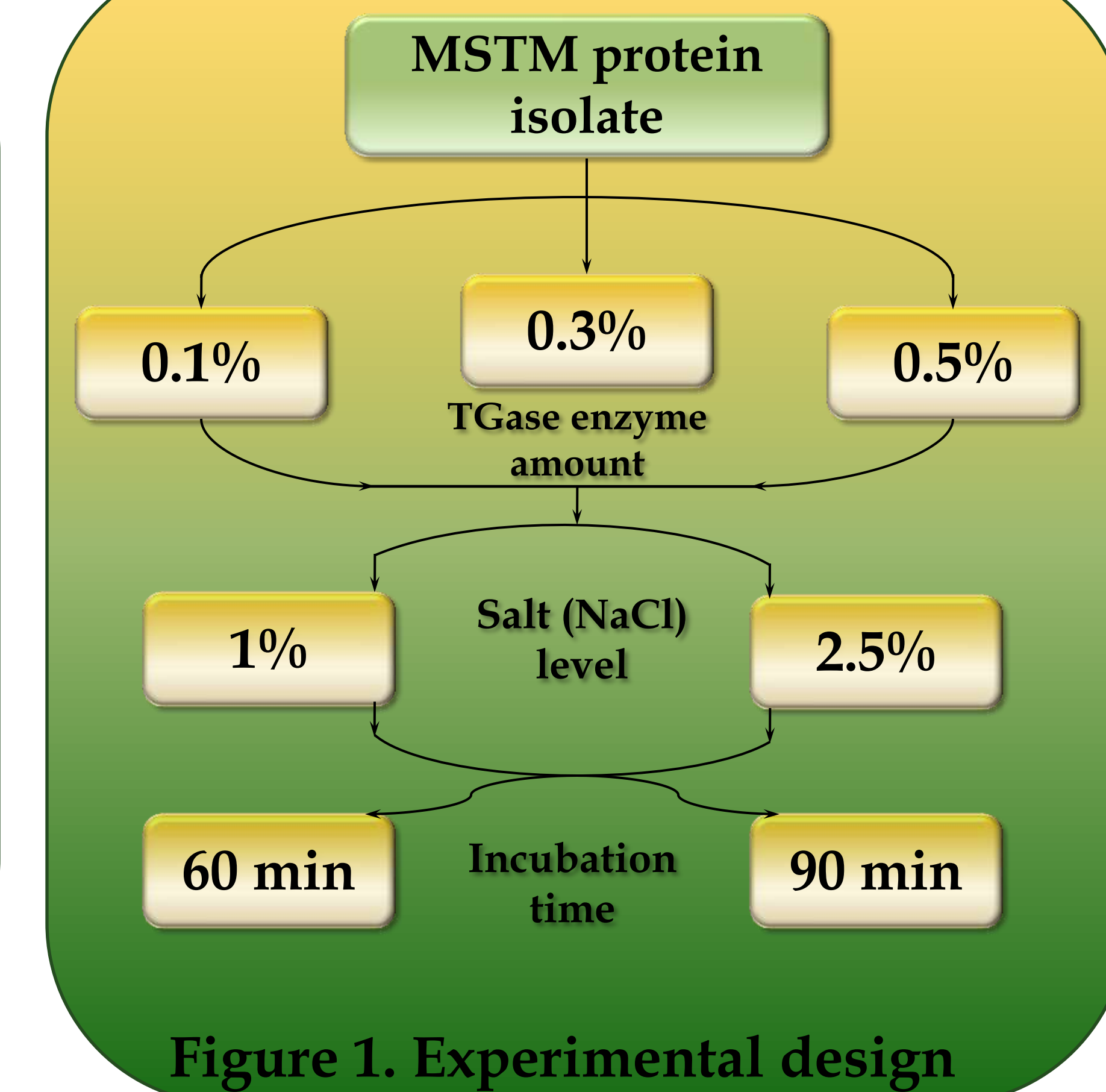


Figure 1. Experimental design

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