

## Combined Effect of High Hydrostatic Pressure and Microbial Transglutaminase on Texture, Color and Protein Denaturation of a Restructured Meat Product

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High hydrostatic pressure (HHP) in combination with transglutaminase may cause changes in the texture of meat and meat products as a consequence of modifications in protein conformation enhanced by amino acids' crosslinks. This paper describes the effect of combining application of HHP and microbial transglutaminase (MTGase) on restructured meat product (*medallion* type), through the evaluation of protein denaturation, instrumental color and texture (TPA). Protein structural modifications were evaluated by sodium dodecyl sulfated gel electrophoresis (SDS-PAGE). Texture profile analysis (TPA) was carried out by evaluating parameters such as hardness, springiness, cohesiveness and chewiness. Sarcoplasmic and myofibrillar proteins from reconstructed beef were extracted by using sample buffer containing mercaptoethanol and SDS. Few changes were observed in the protein profile obtained by SDS-PAGE. The HHP (200 MPa) caused slight modification in protein of 90.38 kDa and the treatment with MTGase (0,7% e 1%) caused modification in the polypeptide chain of 24,6 and 22,13 kDa. These results indicate that the product maintains its overall protein profile since the proteins of actomyosin system, which are the major proteins of muscle tissue, remained without any structural modifications. Pressure application at 200MPa promoted an increase in L\*-value and decrease of a\*, b\*, C\* and H° related to the decrease of red color intensity, possibly by structural modification of myoglobin as also observed by SDS-PAGE. The use of HHP together with MTGase contributed to an increase in the hardness, the elasticity and chewiness in comparison to the control. Although each treatment individually affected the product, further studies are required in order to evaluate possible beneficial combination of HHP and transglutaminase to the restructured meat products aiming at obtaining products with improved texture.

**Keywords:** high hydrostatic pressure (HHP), microbial transglutaminase (MTGase), texture, color, electrophoresis.

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