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Xiong G.-Y., Zhang L.-L., Zhang W., Wu J.:

Influence of ultrasound and proteolytic enzyme inhibitors on muscle degradation, tenderness, and cooking loss of hens during aging

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The potential contribution of mechanical disruption by ultrasonics and endogenous proteolytic enzymes on the tenderisation of hen muscle were investigated. The importance of endogenous enzymes was evaluated using various specific inhibitors. Freshly obtained breast muscles of culled hens, from the 6 groups investigated were treated with different proteolytic enzyme inhibitors and/or ultrasonics, group was treated with different methods, and then stored at 4 °C for 0, 1, 3, and 7 days. Shear force decreased by 1.19 kg, and shear force and cooking loss were reduced by 0.69 kg and 4.27%, respectively, in the

incorporated group treatment. The calpastatin activity was affected by all treatments except in the Z-DEVD-fmk-treated group, caspase-3 activity decreased in Z-DEVD-fmk-treated group. Therefore, the results suggest that ultrasonics and endogenous proteases contributed to muscle degradation, thereby improving hen meat tenderness and decreasing the cooking loss. Thus muscle degradation, tenderness, and water-retaining properties of hens were improved by a combination of ultrasound and exogenous proteolytic enzyme inhibitors.

Keywords:

ultrasonic; protease inhibitor; incorporating treatment; myofibrillar protein; Caspase-3/7; Z-DEVD-fmk

[fulltext]