



Impact of Woody Breast Severity on the Sensory Properties and Acceptability of Chicken Products

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Objectives

The woody breast (WB) myopathy has caused economic losses in excess of \$200 million annually to the poultry industry due to undesirable textural attributes and decreased functionality. This hardened muscle is also associated with other undesirable traits, such as white striping. This research was conducted to evaluate the impact of WB severity and genetic strain on consumer acceptability and sensory attributes of baked and fried broiler breast meat and elucidate the consumer acceptability of tumble-marinated, fajita meat made from broilers with normal (NOR), moderate (MOD) and severe (SEV) WB meat.

Materials and Methods

For descriptive analysis ($n = 7$ panelists, 10 panels) on baked and fried chicken, 3×5 factorial arrangements within randomized complete block designs with four replications were utilized to evaluate three severities of woody breast and the five different genetic strains that are most commonly used in the poultry industry. When significant differences ($P < 0.05$) occurred among treatments, Duncan's multiple range test was utilized to separate treatment means. For consumer acceptability of baked chicken ($n = 123$ panelists), fried chicken ($n = 125$ panelists), and fajita meat ($n = 127$ panelists), randomized complete block designs with two replications were used to determine the impact of strain and severity on acceptability.

Results

For baked chicken, SEV breasts were chewier, juicier, crunchier, and more cohesive ($P < 0.05$) than NOR and MOD breast samples. For fried chicken, SEV breasts were less tender and chewier ($P < 0.05$) than NOR breasts. In addition, SEV breasts were more cohesive and juicier,

but less mushy ($P < 0.05$) than NOR and MOD breasts. For fried chicken samples, SEV breasts were crunchier ($P < 0.05$) than MOD breasts, which were crunchier ($P < 0.05$) than NOR breasts. The texture and overall acceptability of NOR baked breasts and fajita meat were preferred by consumers ($P < 0.05$) over SEV breasts. In contrast, the SEV breasts were preferred ($P < 0.05$) over the NOR breast meat for the fried chicken formulation. No differences existed ($P > 0.05$) in acceptability among genetic strains in baked or fried chicken breasts. The baked chicken consumer panelists were divided into 7 distinct clusters based on their sensory evaluation ratings. Cluster analysis indicated that 49% of panelists preferred NOR breast fillets, 21% preferred SEV, and 30% had no preference between NOR and WB (MOD, SEV) samples. The fried chicken consumer panelists were divided into 5 clusters, of which 65% preferred WB (MOD, SEV) over NOR, 29% preferred strain B over strain A, and 11% preferred strain A over strain B. The fajita chicken meat consumer panelists were divided into 5 clusters, of which 75% of panelists liked NOR breast samples, 72% liked MOD samples, and 45% liked SEV samples.

Conclusion

Results indicated that WB severity had a greater impact on sensory attributes and consumer acceptability than genetic strain. Higher WB severity created an undesirable texture that negatively impacted the acceptability of baked meat. However, the increased crunchiness and cohesiveness due to woodiness had a positive impact on the fried chicken acceptability. Results indicated that a large percentage of consumers rated baked, fried, and fajita samples as acceptable regardless of whether NOR or WB (MOD, SEV) meat was used, but some consumers did not like baked or fajita meat that was made from SEV WB meat.