

Effects of postmortem deboning time on texture characteristics of cooked chicken breast meat patties (#555)

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Introduction

Due to its high protein and low fat content, ground chicken breast meat is becoming more common in the US market. However, there is a lack of information about how whole chicken breast meat quality affects the ground products. With lamb loins it has been shown that postmortem aging can directly affect the quality of comminuted products. It is also well known that the postmortem time at which chicken breast fillets (pectoralis major) are removed from carcasses results in significant changes in texture quality of cooked products. The objective of the present study was to evaluate instrumental texture measurements and sensory descriptive texture profiles of cooked patties made from ground chicken fillets deboned 2 or 24 h postmortem. Intact chicken fillets deboned at the same postmortem times were also evaluated for comparison.

Methods

Post-chill carcasses of broilers (6 wk old) were procured from a local commercial plant at 60 min postmortem after water-immersion chilling. Breast fillets were deboned at either 2 h or 24 h postmortem. One fillet from each carcass was ground to make meat patties and the other fillet was used for intact fillet evaluation. Samples were stored in a -20°C freezer and cooked directly from a frozen state to an endpoint temperature of 78°C . Color (CIE $L^*a^*b^*$) and pH of raw fillets were measured using a Minolta spectrophotometer and a pH meter with a spear-tipped probe, respectively. Instrumental texture properties of cooked samples were determined using both compression force and Warner-Bratzler shear force. Sensory descriptive texture profiles (consisting of 8 attributes) were evaluated by 8-trained panelists using a Spectrum™ like approach with 0-15 universal intensity scale. Data were analyzed using the General Linear Model (GLM) procedures of SAS. Means were separated with the Tukey option at a significance level of 0.05.

Results

Tables

Conclusion

Like cooked intact breast fillets, cooked patties made from 2h-deboned fillets exhibit significantly higher hardness and shear force and are perceived more cohesive, harder, and chewier with greater cohesiveness of mass, bolus size, and rate of breakdown than cooked patties made from 24h-deboned fillets ($P < 0.05$). Data suggest that postmortem deboning time significantly affects both instrumental texture measurements and sensory descriptive texture profiles of cooked chicken breast patties and grinding is not able to complete-

ly alter the effects of postmortem deboning on intact breast meat texture.

Table 1. Characteristics of raw broiler breast fillets (mean \pm stdev)

Deboning time	Weight (g)	pH	L *	a*	b*
2h	127.6 ^a \pm 23.6	5.98 ^a \pm 0.21	45.9 ^a \pm 4.0	0.03 ^a \pm 0.6	8.4 ^a \pm 1.6
24h	130.6 ^a \pm 22.7	5.88 ^b \pm 0.22	50.1 ^b \pm 3.8	-0.49 ^b \pm 0.51	8.8 ^a \pm 1.7

^{a,b} Mean values with no common superscript in the same column are different ($p < 0.05$).

Table 2. Compression force and Warner-Bratzler shear force of cooked intact broiler breast fillets and patties (mean \pm stdev)

PARAMETER	FILLET DEBONING TIME		PATTY DEBONING TIME	
	2h	24h	2h	24h
Compression force (N)	19.1 ^a \pm 2.2	16.4 ^b \pm 2.0	24.5 ^a \pm 2.7	21.2 ^b \pm 2.7
Warner-Bratzler shear force (N)	9.5 ^a \pm 3.1	3.3 ^b \pm 1.0	3.3 ^a \pm 0.3	1.5 ^b \pm 0.4

^{a,b} Mean values with no common superscript in the same row within the same type of meat product are different ($p < 0.05$).

Table 3. Mean intensity scores (0 to 15 scale) of sensory descriptive texture attributes of cooked intact broiler breast fillets and patties (mean \pm stdev)

TEXTURE ATTRIBUTE	FILLET DEBONING TIME		PATTY DEBONING TIME	
	2h	24h	2h	24h
Cohesiveness	7.0 ^a \pm 1.8	5.2 ^b \pm 1.0	6.4 ^a \pm 1.2	4.8 ^b \pm 1.2
Hardness	6.4 ^a \pm 1.5	4.9 ^b \pm 0.9	6.0 ^a \pm 0.6	4.7 ^b \pm 0.8
Juiciness/dryness	5.6 ^a \pm 1.0	5.3 ^b \pm 1.0	3.9 ^a \pm 1.2	3.8 ^a \pm 0.8
Cohesiveness of mass	7.2 ^a \pm 1.2	5.7 ^b \pm 1.1	6.4 ^a \pm 1.2	5.0 ^b \pm 0.8
Bolus/wad size	6.2 ^a \pm 1.6	4.7 ^b \pm 0.8	5.6 ^a \pm 0.3	4.4 ^b \pm 0.8
Wetness of wad	6.3 ^a \pm 0.8	6.0 ^b \pm 0.9	5.3 ^a \pm 0.7	5.1 ^a \pm 0.6
Rate of breakdown	7.2 ^a \pm 1.6	5.4 ^b \pm 0.9	6.8 ^a \pm 0.9	5.3 ^b \pm 0.5
Chewiness	6.7 ^a \pm 1.6	5.0 ^b \pm 0.9	6.5 ^a \pm 0.9	5.0 ^b \pm 0.5

^{a,b} Mean values with no common superscript in the same row within the same type of meat product are different ($p < 0.05$).

Results

Notes