

Texture Evaluation Of Breast Meat From Broilers Affected By Deep Pectoral Myopathy (#137)

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Introduction

The Deep Pectoral Myopathy (DPM) is a problem in modern broiler but was found in broilers and turkeys commercial. The supracoracoideus muscle, or Deep Pectoral Muscle, is commercially known as little fillet. The lesions can affect the little fillet and show color variation, with a pinkish hemorrhagic appearance to a greyish-green discoloration. Although the incidence of DPM increases in heavy chickens, can occur at any age or weight and depends on the management and the breeding system used. There is a little knowledge of meat quality of broiler breast affected by DPM, thus this study aimed to evaluate the meat texture of *Pectoralis major* muscle from breast broiler affected by the Deep Pectoral Myopathy.

Methods

Broilers were slaughtered according to the routine of each slaughterhouse and incidence of Deep Pectoral Myopathy (DPM). Breast samples were collected from broilers affected by DPM (from Ross AP95 lineage and slaughtered with 42 days of age) and a control group without the myopathy. The macroscopic identification of the carcasses was realized according to the degree of severity that affect the supracoracoideus muscle and the classification was according to the methodology used by Bilgili; Hess (2008): DPM score 2- muscles with coagulative necrosis, fibrous tissue texture and pink to plumb; DPM score 3- muscles with green necrotic area. After identification, the *Pectoralis major* muscle was removed from the poultry carcasses and the meat texture analysis was carried out. The water-holding capacity (WHC) was determined as described by Hamm (1961). In summary, 2 g of deboned muscle were placed between filter papers and two acrylic plates and subjected to a pressure exerted by 10 kg weight, for five minutes. The cooking loss (CL) was determined from deboned and skinned breast samples as Honikel (1987). The samples were weighed, packed and cooked in a water-bath at 85 °C for 30 minutes. Subsamples from the CL analysis, were used to determine shear force (SF). SF was analyzed by the Meullenet-Owens Razor Shear method (MORS) described by Meullenet et al. (2004), with a cutting speed of 10 mm / sec, depth of the shear specimen 20 mm and trigger force of 0.1 N. The force required was expressed in newton (N). The sarcomere was according to Cross et al. (1981), that used approximately 0.5 grams of each muscle sample, add reagents and then one drop of the homogenate mixture was transferred to a histological slide and analyzed by

microscope. This study used a randomized design (Unaffected, DPM score 2 and DPM score 3) with 50 repetitions each, results were submitted to analysis of variance using the GLM Procedure of SAS operating system and means were compared by Tukey test at 5% significance.

Results

There was difference ($P < 0.05$) in water-holding capacity (WHC), shear force (MORS), and sarcomere of meat samples of the *Pectoralis major* muscle from Ross broilers affected by Deep Pectoral Myopathy (Table1).

The DPM score 3 presented higher values for water-holding capacity (WHC %) but didn't differ ($P < 0.05$) from DPM score 2. There was no difference ($P > 0.05$) for cooking loss (CL), so, it doesn't interfere in the greater loss of exudate in the musculature but higher values for DPM score 3 were observed. Yalcin et. al. (2018), in a study of the occurrence of Deep Pectoral Myopathy in broilers and associated changes in breast meat quality founded higher values for CL (%) in meat unaffected by myopathy. The Shear Force (SF) presented higher values in the meat with DPM score 3, that is, less tender meat. There was also an increase in the values of sarcomere length in meat from broilers affected by Deep Pectoral Myopathy.

Conclusion

Deep pectoral myopathy that occurs in the supracoracoideus muscle influences the texture characteristics (WHC, FS and sarcomere) of the *Pectoralis major* muscle of broilers and this connection interferes with the poultry quality meat. But, it becomes important for the food processing industry in the production of meat products.

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Notes

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Table 1. Values of water-holding capacity (WHC), cooking loss (CL), shear force (MORS) and sarcomere of the *Pectoralis major* muscle from broilers affected by Deep Pectoral Myopathy.

	WHC (%)	CL (%)	SF (N)	Sarcomere
Unaffected	67.40±4.02 ^B	28.75 ±1.40 ^A	12.469±0.90 ^{AB}	1.62±0.05 ^B
DPM score 2	70.34±2.53 ^{AB}	29.34 ±1.39 ^A	11.949±1.26 ^B	1.76±0.06 ^A
DPM score 3	71.01±0.99 ^A	30.14 ±1.98 ^A	13.493±1.01 ^A	1.72±0.07 ^A
P-value	0.0177	0.1722	0.0108	<0.0001

Means followed by distinct letters (in the columns) differ by Tukey test (P<0.05%).

Table 1. Values of quality meat of the *Pectoralis major* muscle from broilers affected by DPM

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