

## Deep Pectoral Myopathy And Its Influence On The Chemical Composition Of Broilers Breast Muscle (#138)

Aline Giampietro-Ganeco<sup>1</sup>, Hirasilva Borba<sup>2</sup>, Juliana L. Malagoli de Mello<sup>2</sup>, Mateus R. Pereira<sup>2</sup>, Fábio B. Takeda<sup>3</sup>, Érika Nayara F. Cavalcanti<sup>2</sup>, Maisa S. Fávero<sup>2</sup>, Rodrigo F. Oliveira<sup>2</sup>, Marco A. Trindade<sup>1</sup>

<sup>1</sup> Faculty of Animal Science and Food Engineering, University of São Paulo, Pirassununga, Brazil; <sup>2</sup> Faculty of Agrarian and Veterinary Sciences, São Paulo State University, Jaboticabal, Brazil; <sup>3</sup> Department of computer science, Federal University of São Carlos, São Carlos, São Carlos, Brazil

### Introduction

The Deep Pectoral Myopathy (DPM) is also known as Green Muscle Disease or Oregon's disease and is considered a major problem in the production lines of the slaughterhouses. This myopathy isn't a new disease but is becoming increasingly common in the flesh of broilers and turkeys selected for the production of meat with exacerbated breast. It can cause damage to the consumer market, especially of whole carcasses, since the lesions are identified after boning of the carcass and may interfere with the quality of the product. Deep Pectoral Myopathy is characterized by necrosis and atrophy of supracoracoideus muscle that exhibit color variation, with a pink hemorrhagic appearance to grayish-green discoloration. The aim of this study was to evaluate the chemical composition of *Pectoralis major* muscle of broilers affected by Deep Pectoral Myopathy.

### Methods

Broilers were slaughtered according to the routine of each slaughterhouse and incidence of Deep Pectoral Myopathy (DPM), breast samples collected from broilers affected by DPM, the Ross AP95 lineage and slaughter at 42 days of age and a control group also without the presence of myopathy. The macroscopic identification of the carcasses was performed according to the degree of severity that affects the supracoracoid muscle and the classification 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, the samples were freeze-dried, milled and then evaluated the chemical composition was determined by quantifying protein, lipid, moisture and ash, as specified in AOAC (2005) methods 977.14, 991.36, 950.46 and 920.153, respectively. This study used a randomized design (Unaffected, DPM score 2 and DPM score 3) with 50 repetitions each, and the 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 a difference ( $P > 0.05$ ) for protein and moisture percentages (Table 1).

**Table 1.** Chemical composition of *Pectoralis major* muscle of broiler chickens affected by Deep Pectoral Myopathy.

	Protein (%)	Lipid (%)	Moisture (%)	Ash (%)
Unaffected	25.75±1.82 <sup>A</sup>	2.22±0.35 <sup>A</sup>	70.59±0.80 <sup>B</sup>	1.75±0.41 <sup>A</sup>
D P M score 2	22.65±1.95 <sup>B</sup>	2.28±0.47 <sup>A</sup>	71.59±0.37 <sup>A</sup>	1.65±0.46 <sup>A</sup>
D P M score 3	27.80±3.53 <sup>A</sup>	2.32±0.56 <sup>A</sup>	70.93±0.39 <sup>B</sup>	1.83±0.38 <sup>A</sup>
P-value	0.0005	0.8924	0.0016	0.6214

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

Lower values for protein percentages in samples classified in DPM score 2 were observed, this was also observed by Yalcin et. al. (2018) with values of 21.45%. These authors observed differences for all chemical composition and in this study only for protein and moisture percentages. The percentage of moisture was also higher in meat of DPM score 2 and differed ( $P > 0.05$ ) from meat unaffected and classified in DPM score 3. According to the US Department of Agriculture (USDA, 2016), the values for lipids should be around 2.23%, in the unaffected meats values (2.22±0.35) were close to those recommended. There was also no difference in the lipid porction of the unaffected meats and affected by DPM score 2 and score 3. The minerals present in the meat of the animals are associated with the water and protein fraction of the meat, whereby the leaner portions contain a greater amount of mineral salts than the fatter portions. It is observed that meat unaffected contains a higher percentage of fat than meat affected with myopathy, although there is no difference ( $P > 0.05$ ).

### Conclusion

The degree of severity Deep Pectoral Myopathy score 2 connection influences the percentages of protein and moisture of the *Pectoralis major* muscle of broilers affected by myopathy. The percentage of water from slaughtered animal's relationship with the protein, in this work found lower values of protein and higher values of moisture in these DPM score 2 meats.

### Acknowledgements

The authors appreciate the São Paulo Research Foundation (Fundação de Amparo à Pesquisa do Estado de São Paulo – FAPESP, 2015/08471-8 and 2018/06900-7) for financial support.

## Notes

## References

AOAC (2005) 'Official methods of analysis.' 18th edn. (Association of Analytical Chemists: Washington, DC).

BILGILI SF, HESS J (2008) Miopatia peitoral profunda. Informativo traduzido do original Ross Tech 08/48. **Aviagen Brasil**: Tecnologia, Campinas, v. 1, n. 3.

YALCIN, S. et. al. (2018) The occurrence of deep pectoral myopathy in broilers and associated changes in breast meat quality. **British Poultry Science**, Vol. 59, No. 1, 55–62. <https://doi.org/10.1080/00071668.2017.1401214>

USDA (2016) **National nutrient database for standard reference**. Washington DC, USA: Agriculture Handbook, n.26, United States Department of Agriculture, 2016

## Notes