

RESEARCH ON THE CHEMICAL COMPOSITION OF THE DEER MEAT PRESERVED BY FREEZING

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Abstract

The effectuated researches are part of a study program of hunting species that includes haematological and biochemical profile establishment in consideration of estimating physiological profile, as well as the analysis of nutritive value of obtained meat from these.

In the present work are analyzed dates about nourishment values of cervide meat harvested in N-E Romania.

Interest has risen for hunting sportive activity and for unanimously esteems of culinary preparation results of cervide meat, needs scientific argumentation in consideration of characterization of growing performances on meat quality.

There has been analyzed with help of Food-Check meat evidence harvested from muscular regions in consideration of chemical determination and the appreciation of its nutritive values.

Meat quality appreciation has been made throw establishment of organoleptic properties on fresh meat as well as on preserved meat throw congealment and chemical determination was made only on preserved meat.

The analysis of studied chemical parameters distinguishes a convenient rapport of chemical components that locates cervide meat in the category of primary meat domain utilizabile most favourable for man nourishment.

Key words: stag, chemical composition of meat, Longissimus dorsi

INTRODUCTION

Meat quality appreciation is a process that includes the analyse of physic – chemical and organoleptic parameters, establishing the nutritional, biological, food and culinary value [3].

There were processed samples for determination of protein, collagen, fat, water and pH, knowing that the nutritional value is given by the expression of these parameters and the sensory characteristics are based on relationships in which they are found [1].

The evidence of biochemical characteristics of meat from deer, differentiated by gender, allows its classification among the meat quality, fact which it places into consumer preferences as a refined meat [2].

MATERIAL AND METHOD

As biological material have been used 7 individuals, 4 males and 3 females, the common red deer (*Cervus elaphus L.*), harvested in N-E Romania.

Processing of samples was done using Food – Check Analyzer, on the muscle regions, for determination of chemical composition and appreciation of their nutrition value.

Meat quality appreciation was made by establishing the organoleptic properties of warm meat, also at the one preserved by freezing; chemical tests were performed only on preserved meat.

In terms of chemical composition there have been followed: the contents of protein, fat, collagen, water and the pH value.



Automatic Food – Check Analyzer

RESULTS AND DISCUSSION

The nutritional value of meat is reflected by the high content of protein - which contain in physiological proportion all the necessary amino acids of the body.

The content in minerals, especially microelements, vitamins and biostimulants increase the nutritional and organic value of meat.

In correlation with high nutritional value of meat is its digestibility, reflected by the structure of muscle tissue and its chemical composition.

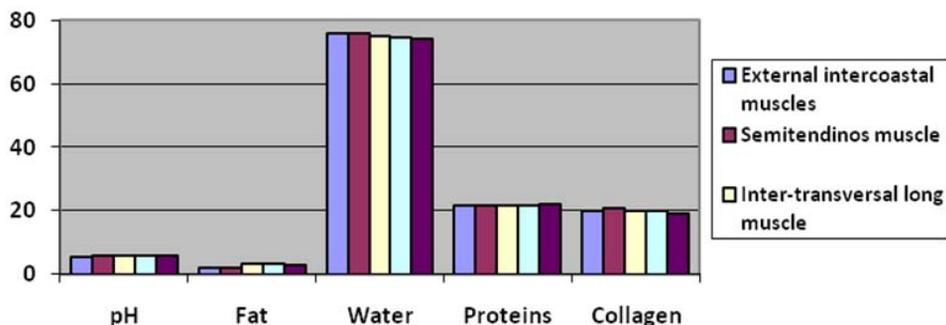
These examinations included the determination of protein, fat, collagen, water and pH values; is known that the digestibility of sarcoplasmatic protein is higher than the one of the stroma (collagen, elastin).

One element that decreases the amount of game meat digestibility is the quantity of blood retained in the capillaries of muscle and the amount of intramuscular fat.

The values of protein content at males (Tab. 1) are between 21.5, at gastrocnemian muscle and 22.1, at dorsal longissimus muscle.

Table 1
 The chemical composition of red deer carcass

Specification	pH	Fat	Water	Proteins	Collagen
External intercostals muscles	5,72	2,1	75,8	21,8	20,2
Semitendinos muscle	5,79	2,3	75,6	21,8	20,8
Inter-transversal long muscle	5,75	3,2	75,0	21,6	20,0
Gastrocnemian muscle	6,09	3,5	74,6	21,5	19,9
Longissimus dorsi muscle	6,1	2,9	74,2	22,1	19,1



The determined values of the proteins are superior to those cited by the literature for domestic ruminants.

The values for fat ranged from 2.1 in external intercostals muscles to 3.5 in gastrocnemian.

The fat content reflects differences between the morph structure of venison meat and the one of domestic ruminants, in which the average of fat percent is 11.58% (with differences due to the fattening, age and gender).

Determination of collagen content showed a lower level in dorsal longissimus muscle, respectively 19.1%, the highest value of 20.8% was recorded at semitendinos muscle.

In accordance with the values of present parameters, the percentage of water was also

determined, it varied between 74.2% in the Longissimus dorsi muscle and 75.8% in external intercostals muscles.

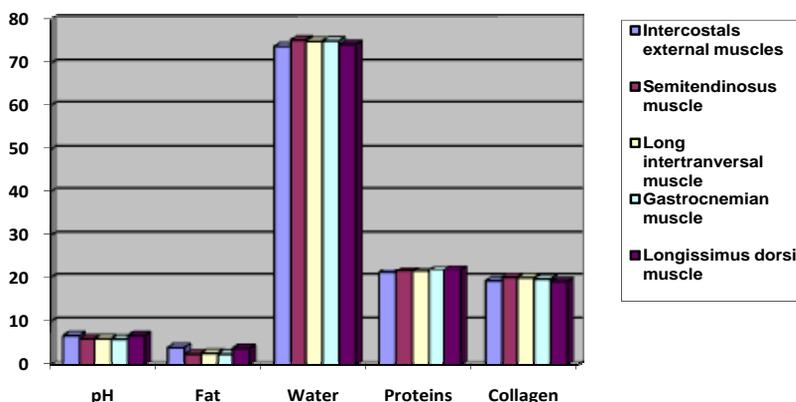
As in the case of the determinations effectuated on the same muscles, harvested from domestic animals, the nutritional value, rank in terms of chemical component showed that the nutritive value is higher in dorsal longissimus muscle.

The value of pH was between 5.75 at long inter-transversal muscle and 6.1 to dorsal longissimus muscle, which it represents the properly entered in the parameters cited by literature.

The tests carried out on meat provided from females are presented in Table 2.

Table 2
 The chemical composition of roe carcass

Specification	pH	Fat	Water	Proteins	Collagen
External intercostals muscles	6,8	4,1	73,9	21,3	19,3
Semitendinos muscle	6,09	2,6	75,4	21,7	20,1
Inter-transversal long muscle	6,10	2,8	75,1	21,6	20,0
Gastrocnemian muscle	6,04	2,6	75,2	22,0	19,7
Longissimus dorsi muscle	6,8	3,9	74,4	22,1	19,1



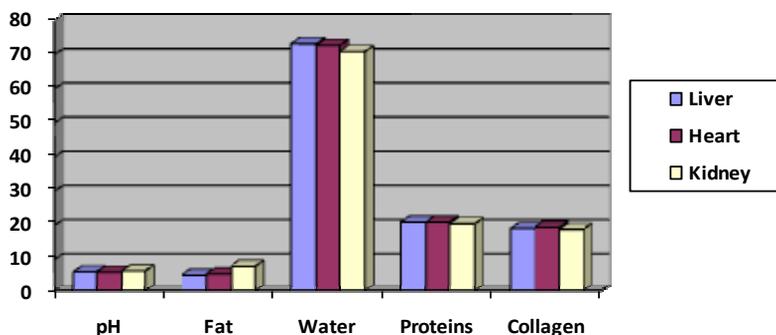
It was notified that the differences between chemical composition, determined between gender performance, reflected by growth performance and probably the period of males collection was realized (the rut

period), fact that influence the behaviour and the nutritional level.

Analysis that included the chemical composition of internal organs did not show differences related to sex and not reveal differences from the literature.(Table 3).

Table 3
 The chemical composition of internal organs at true deer

Specification	pH	Fat	Water	Proteins	Collagen
Liver	6,40	5,4	73,2	21,0	19,1
Heart	6,28	5,8	72,7	21,0	19,4
Kidney	6,7	8,0	70,9	20,5	18,8



CONCLUSIONS

1. This study highlights that the characteristics of chemical composition of red deer meat is similar to the one from domestic ruminants in poor condition of fattening.

2. The ratio between analysed parameters reflects the higher value from the point of view of nutrition, biological and food of meat from deer, the meat being found in the current preferences of consumers (fat / collagen reduced).

3. It should be considered during the harvesting period of studied specimens, since the male are in the matching period, fact which is reflected in lower organoleptic properties of meat from males, fact demonstrated by the different results in chemical composition of meat from both genders. We believe that the ratio of

chemical constituents is more favorable in females caused by a higher percentage of fat with beneficial consequences on the energy value and culinary qualities.

REFERENCES

Book article

[1]. Anderson, B.A., Clements, M.L., Dickey, L.E., Exler, J. And Hoke, I.M., Composition of Foods: Lamb, Veal, and Game Products; Raw, Processed, Prepared. USDA Agricultural Handbook, 1989

Journal articles

[2]. Hoffman L.C., Eva Wiklund, Game and venison – meat for the modern consumer Meat Science 74: 197–208, 2006

[3]. Lydia C. Medeiros, Busboon, J.R., Field A.R., Janet C. Miller, Betty Holmes, Nutritional Content of Game Meat, Departments of Family and Consumer Sciences and Animal Sciences, Cooperative Extension Service, College of Agriculture, University of Wyoming, 2002