International Journal of Innovation and Scientific Research
ISSN 2351-8014 Vol. 34 No. 2 Jan. 2018, pp. 83-95

http://www.ijisr.issr-journals.org/

Effet du niveau de protéine alimentaire sur les caractéristiques chimiques de la viande de cobaye (*Cavia porcellus* L.) à l'Ouest Cameroun

[Effect of the level of dietary proteins on the chemical characteristics of Guinea Pig meat (*Cavia porcellus* L.) in the Western Highland of Cameroon]

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ABSTRACT: In the light of evaluating the chemical characteristics of Cavis meat, 54 animals of age 3 weeks, partitioned in 3 groups of 18 animals each (9 males and 9 females)**,** were monitored individually up to 8 weeks of age and subsequently used for the exercise. Each group received a ration containing 14%, 16% or 18% of crude protein (CP). After 12 hours of fasting/starving, all the animals were slaughtered and muscles (loin, shoulder and thigh) were obtained. The lipid content of the loin of Cavis placed on the ration containing 16% CP (1.75%FM) was comparable ($p>0.05$) to that of animals that consumed diet containing 14% and 18%CP, respectively 2.50% FM and 1.68% FM. The lipid content of the shoulder muscle from Cavis placed on 16% and 18%CP in their rations were statistically comparable ($p>0.05$), respectively 2.50% FM and 3.44% FM, but significantly ($p<0.05$) higher than those placed on 14%CP diet (1.00%FM). Apart from the water content which presents no significant difference ($p>0.05$) between the different muscle parts, that of lipids, proteins and ash of the thigh muscles were significantly ($p<0.05$) higher than that of the shoulder and loin muscles. The calcium content of the thigh of Cavis placed on a diet of 18% CP was comparable ($p>0.05$) to that of animals placed on a diet containing 14% and 16% CP. The sodium content of the loin of cavis placed on a ration containing 14% CP was comparable ($p>0.05$) to that of animals fed with rations containing 16% and 18% CP. The potassium content of the thigh of Cavis placed on a diet of 16% and 18% CP was comparable ($p>0.05$) but significantly ($p<0.05$) lower than that of Cavis fed diet containing 14% CP. The Zinc content of the loin, thigh and shoulder of the animals of batch RC1 (14%CP) and RC2 (16%CP) were statistically comparable ($p>0.05$) but significantly ($p<0.05$) lower than those of batch RC3 (18%CP). Apart from contents in Mg and Zn which do not present any significant difference ($p>0.05$) between the different parts of the muscle, the Ca, Na, K and Fe proportions of the thigh muscle were significantly ($p>0.05$) higher than those of the shoulder and loin muscles.

KEYWORDS*:* Guinea pig, alimentary protein, meat, chemical characteristics, west-Cameroon.

RÉSUMÉ: En vue d'évaluer les caractéristiques chimiques de la viande de cobaye, 54 animaux âgés de 3 semaines, repartis en 3 lots de 18 animaux (9 mâles et 9 femelles) chacun, ont été conduits individuellement jusqu'à 8 semaines d'âge et utilisés à cet effet. Chaque lot recevait une ration contenant 14%, 16% ou 18% de protéines brutes (PB). Après un jeune de 12 h, tous les animaux étaient abattus et les muscles (longe, épaule, cuisse) ont été obtenus. La teneur en lipides de la longe des cobayes soumis à la ration de 16% de PB (1,75% MF) était comparable ($p>0,05$) à celles des animaux consommant les régimes de 14% et 18% de PB, respectivement 2,50% MF et 1,68% MF. Les teneurs en lipides de l'épaule des cobayes ayant 16% et 18% de PB dans leurs rations ont été statistiquement comparables ($p>0,05$), respectivement 2,50% MF et 3,44% MF, mais

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significativement ($p<0,05$) plus élevées que celle de ceux dosant 14% de PB dans leur régime (1,00% MF). En dehors de la teneur en eau qui ne présente aucune différence significative ($p>0,05$) entre les différentes parties du muscle, celles en lipides, en protéines et en cendres du muscle de la cuisse ont été significativement ($p<0,05$) plus élevées que celles des muscles de l'épaule et de la longe. La teneur en calcium de la cuisse des cobayes recevant 18% de PB dans leur ration était comparable ($p>0,05$) à celles des animaux soumis aux régimes contenant 14% et 16% de PB. La teneur en sodium de la longe des cobayes soumis à la ration contenant 14% de PB était comparable ($p>0,05$) à celles des animaux nourris à l'aide des aliments contenant 16% et 18% de PB. Les teneurs en potassium de la cuisse des animaux alimentés avec les rations contenant 16% et 18% de PB ont été comparables ($p>0,05$) mais significativement ($p<0,05$) plus faibles que celle des cobayes nourris à l'aide de l'aliment dosant 14% de PB. Les teneurs en zinc de la longe, la cuisse et l'épaule des animaux des lots RC1 (14%PB) et RC2 (16%PB) ont été statistiquement comparables ($p>0,05$) mais significativement ($p<0,05$) plus faible que celle des cobayes du lot RC3 (18%PB). En dehors des teneurs en Mg et en Zn qui ne présentent pas de différence significative ($p>0,05$) entre les différentes parties du muscle, les proportions en Ca, Na, K et Fe du muscle de la cuisse ont été significativement ($p<0,05$) plus élevées que celles des muscles de l'épaule et de la longe.

MOTS-CLEFS: Cobaye, protéines alimentaires, viande, caractéristiques chimiques, Ouest-Cameroun.

1 INTRODUCTION

The population explosion observed these recent years in developing countries in general and Cameroon in particular, has brought about food insufficiency among other things [1]. The rising demand in animal proteins exposes the local population to protein-energy malnutrition [2]. This type of malnutrition is responsible for the death of about 3.5 million children per year in Sub-Saharan Africa [3]. It is therefore absolutely necessary to find solutions rapidly in order to curb this increase. As such, the identification of supplementary protein sources and a particular interest for nutritional quality of canned products which seems indispensable. [4] and [5] underlines that caviaculture is one of the long term solutions to nutritional needs in general and proteins in particular. Otherwise, the importance given to the rearing of Cavis rests, among others on its speed of growth, lean meat and high protein content [6]. Despite the efforts of the Cameroon Government, the World Bank and FAO in this domain [7], more is left to be done [8]. In fact, the rearing of Cavis is practiced in an extensive system [9]. All of these practices put together do not permit the animal to express its genetic ability. In animal husbandry in general, and in Caviaculture in particular, feeding plays an important facultative role [10; 11 ; 6]. A feed containing the optimum quantities of protein will ameliorate the production performances of Cavis (Guinea Pig) [12; 13 ; 14], having as proposition the amelioration of the nutritional values (water, proteins, lipids and minerals) of Cavis meat [15]. Therefore, the objective of this study is to evaluate the impact of the level of dietary proteins on the chemical composition of Cavis meat.

2 MATERIALS AND METHODS

This study was carried out between April 2015 and February 2016 at the Research and Application Farm ('FAR' in French), at the soil science and at the animal nutrition and feeding laboratories of the Faculty of Agronomy and Agricultural Sciences ('FASA' in French) of the University of Dschang (Uds). Dschang is situated in the highlands of the West Region of Cameroon at an altitude of 1410m, longitude East of 10° 26'and latitude Nord of 5° 26'. This region receives between 1500 and 2000mm of rainfall annually, with a temperature from 10° to 25°C. The climate is equatorial of the Cameroon type in altitude with short dry season from mid-November to mid-March and a long rainy season from mid-March to mid-November.

2.1 MATERIALS

2.1.1 ANIMAL AND HOUSING

After weaning, Fifty four (54) young Cavis were repartitioned into three homogenous batches of 18 animals (9males and 9 females) each. These young animals were monitored individually up to the age of 8 weeks in the stall. Each stall was littered with untreated wood shavings of 5cm in depth, renewed every 7days to avoid accumulation of faeces and urine.

2.1.2 EXPERIMENTAL RATIONS

For the growth trial, three experimental rations (Table 1) iso-energetic (digestible energy = 2800Kcal/kgMS) were formulated containing 14%, 16% and 18% of crude protein respectively.

- RC14 = Ration with 14 % of proteins batch 1, n = 18)
- RC16 = Ration with 16 % of proteins (batch 2, n = 18)
- RC18 = Ration with 18 % of proteins (batch 3, n = 18)

Table 1 : Chemical composition and formulation of experimental rations for the period of growth

Ingredients (%)	Proportion of ingredients (%)		
	RC1 (14 %)	RC2 (16 %)	RC3 (18 %)
Maize	23	22	18
Residues of semolina of cassava	8	7.5	8
Wheat bran	34.5	34	32
Cotonseed cake	0	2	5
Soybean cake (49%)	0	1	4
Fish meal (60%)	7	9	9
Seashell meal	2	2	2
Iodide salt	1.5	1.5	1
Pennisetum purpureum	23	20	20
Premix 2 %*	1	1	1
Total	100	100	100
Chemical composition			
DM (%)	89.77	93.45	90.42
OM (%DM)	85.35	84.67	83.23
Crude Protein (%DM)	14.02	16.06	18.09
Crude Cellulose (%DM)	12.30	11.55	11.86
Ash (%DM)	14.65	15.33	16.77
Ca	1.35	1.48	1.49
P	0.72	0.79	0.79
Ca/P	1.88	1.87	1.89
DE (Kcal/KgDM)	2805.94	2806.96	2808.32
DE/CP	200.14	174.78	155.24

**Vit A : 3 000 000UI, Vit D 3 :600 000UI, Vit E :4 000mg, Vit K : 500mg, Vit B1 : 200mg, VitB2 : 1000mg, Vit B6 : 400mg, Vit B12 :4mg, Fer : 8000mg, Cu : 2000mg, Zn : 10 000mg, Se : 20mg, Mn : 14000mg, Méthionine : 200 000mg, Lysine : 78000mg ; RG1 : ration gestation contenant 18% de PB ; RG2 : ration gestation contenant 22% de PB ; RG3 : ration gestation contenant 22% de PB.*

2.2 METHODS

During the experimental trial, each animal of the different batches received 31.42gDM of grannulated feed of 4mm in diameter daily and vitaminated water *ad libitum* (240mg Vitamin C tablet in 1.5litres of water). The Cavis were identified with the help of labeled metal rings. With the exception of *P. purpureum*, all the other ingredients used in the fabrication of the feed were bought from retailers of agricultural byproducts in the town of Dschang. This graminaceae, harvested from 'FAR', was chopped off, dried, crushed and incorporated into the different rations. A sample of 100g was extracted from each experimental ration and dried in a ventilated oven of mark Gallemkamp at 60°C till constant weight. These samples were crushed to sizes of 1mm and conserved in plastic sachets for subsequent nutritional analyses.

At the end of the growth trial of young at 8 weeks of age, all the animals were starved for 12hours and weighed and then slaughtered by cervical dislocation followed by evisceration for the evaluation of the chemical characteristics of the meat. Three (03) muscle samples (loin, shoulder and thigh) were extracted respecting the different batches and age (8weeks) of the animals.

2.3 CHEMICAL COMPOSITION OF THE EXPERIMENTAL ALIMENT AND OF THE MEAT

The parameters of chemical composition such as the contents in dry matter (DM) ; organic matter (OM) ; crude protein (CP) ; Crude celloluse (CB) ; Fats ; Ash ; Ca ; P ; DE(Kcal/kg), of the granules and ingredients were evaluated. For the Cavis meat,

the water, lipids, proteins, ash (minerals) Ca, Na, K, Zn and Fe were also determined. These parameters were determined according to the method [16].

2.4 STATISTICAL ANALYSES

The data on the chemical characteristics of meat were subjected to the 2 way (ration and sex) Analysis of variance following the general linear model as follows:

$Yijh = \mu + \alpha i + \beta j + (\alpha\beta)\, ij + e(ijh)$

where : Yijh = observation on animal h subjected to factors i and j
μ = general mean
αi = effect of the level of ration i
βj = effect of sex j
e(ijh) = residual error on the animal subjected to i and j
$(\alpha\beta)ij$ = effect of the interaction between factors i and j

Once any significant difference existed between the treatments, the separation of the means was done using Waller Duncan test at a threshold of 5% significance (Steel and Torrie, 1980). The analytical software used was SPSS. 20.0.

3 RESULTS

3.1 EFFECT OF THE LEVEL OF DIETARY PROTEINS ON THE WATER, LIPIDS, PROTEINS, AND ASH CONTENTS OF CAVIS MEAT

The contents in water, lipids, proteins and ash of the different muscles of Cavis aged 8 weeks, with respect to rations and sex are presented on the Table 2. Generally, it stems out that, the contents in water, lipids, proteins and ash of meat have evolved consistently regardless of the part of meat and sex. In fact, in males, the water content of the loin of animals fed with ration containing 14% and 16% CP (91.00% and 90.00% respectively) were statistically comparable ($p=0.05$) but significantly ($p<0.05$) higher than those fed diet containing 18% CP (80.00%). Equally, in females independently of the sex, no significant difference ($p>0.05$) was observed between the different rations. In males, the water content of the thigh of Cavis fed 18% CP was comparable ($p>0.05$) (90.00%) to that of animals fed ration containing 14% and 16% CP (84.00% and 91.00% respectively), meanwhile, that of animals fed ration containing 14%CP was significantly ($p<0.05$) higher than that of Cavis fed diet of 16% CP ; on the contrary; in females, the water content of the thigh muscle from Cavis fed diet containing 18% CP was comparable ($p>0.05$) (92.00%) to that of animals subjected to diets containing14% and 16% CP (90.00% and 93.00% respectively) ; but the water content of the thigh muscle from animals fed diet containing 16% CP was significantly ($p<0.05$) higher than that from animals fed diet containing 14% CP. Independently of sex, no significant difference ($p>0.05$) was observed between the rations pertaining to the water content of the thigh muscle.

Either in males or independently of sex, no significant difference ($p>0.05$) was observed between the treatments in the water content of the shoulder muscle. Otherwise, the females fed ration containing 14% CP had a significantly ($p<0,05$) higher (93,00%) water content in the shoulder than that from Cavis fed diets containing 16% and 18% CP (51.00% and 83.00% respectively) ; that from animals fed ration containing 18% CP was significantly ($p<0.05$) higher than Cavis fed diets containing 16% CP.

In males, the lipid content of the loin muscle from animals fed rations containing 14% CP was significantly ($p<0.05$) higher (2.78% FM) than that of Cavis subjected to diets containing 16% and 18% CP, 2.00% FM and1.49% FM respectively; that of animals fed diets containing 16% CP was significantly ($p<0.05$) higher than that of Cavis fed diet containing 18% CP. In females, the lipid content of the loin muscle didn't present any significant ($p>0.05$) difference between the rations. Independently of sex, the lipid content of the loin muscle from Cavis subjected to the ration of 16% CP (1.75% FM) was comparable ($p>0.05$) to that of animals fed diet of 14% and 18% CP, 2.50% FM and 1.68% FM respectively; but that of animals fed ration containing 14% CP was significantly ($p<0.05$) higher than that of Cavis fed ration of 18% CP. Whether in males or independently of sex, no significant difference ($p>0.05$) was observed between the treatments as concerns lipid content of the thigh muscle. In females, the lipid content of the thigh muscle from Cavis subjected to the ration containing 18% CP was significantly ($p<0.05$) higher (4.10% FM) to that of Cavis fed diet containing 16% and 14% CP, 3.74% FM and 3.00% FM respectively; that of animals fed ration containing 14% CP was significantly ($p<0.05$) lower than that from Cavis fed diet containing 16% CP.

Table 2 : Different muscle contents in water, lipids, proteins and in Ash for Cavis aged 8 weeks with respect to rations and sex

Characteristics		Treatments			SEM	Prob.
		RC1	RC2	RC3		
Water content (%)	Loin					
	♂	91.00^{a}	90.00^{a}	80.00^{b}	2.27	0.008
	♀	92.00^{a}	94.00^{a}	92.00^{a}	0.56	0.281
	♂♀	91.50^{a}	92.00^{a}	86.00^{a}	1.40	0.153
	Thigh					
	♂	91.00^{a}	84.00^{b}	90.00^{ab}	1.52	0.002
	♀	90.00^{b}	9300^{a}	92.00^{ab}	0.62	0.004
	♂♀	90.50^{a}	88.50^{a}	91.00^{a}	0.93	0.555
	Shoulder					
	♂	91.00^{a}	91.00^{a}	91.00^{a}	0.26	1.000
	♀	93.00^{a}	51.00^{c}	83.00^{b}	8.02	0.000
	♂♀	92.00^{a}	71.00^{a}	87.00^{a}	4.47	0.129
Lipid content (% FM)	Loin					
	♂	3.00^{a}	2.00^{b}	1.49^{c}	0.28	0.005
	♀	2.00^{a}	1.50^{a}	1.87^{a}	0.17	0.584
	♂♀	2.50^{a}	1.75^{ab}	1.68^{b}	0.17	0.003
	Thigh					
	♂	3.00^{a}	2.00^{a}	2.88^{a}	0.23	0.115
	♀	3.00^{c}	3.74^{b}	4.10^{a}	0.21	0.005
	♂♀	3.00^{a}	2.87^{a}	3.49^{a}	0.21	0.483
	Shoulder					
	♂	0.36^{c}	2.00^{b}	3.22^{a}	0.59	0.000
	♀	2.00^{c}	3.00^{b}	3.66^{a}	0.31	0.006
	♂♀	1.00^{b}	2.50^{a}	3.44^{a}	0.36	0.005
Protein content (% FM)	Loin					
	♂	11.00^{b}	8.50^{b}	14.00^{a}	1.05	0.021
	♀	6.59^{a}	7.50^{a}	7.00^{a}	0.26	0.354
	♂♀	8.75^{a}	8.00^{a}	10.50^{a}	0.81	0.477
	Thigh					
	♂	18.50^{a}	17.00^{b}	19.00^{a}	0.40	0.033
	♀	13.50^{a}	15.00^{a}	13.00^{a}	0.37	0.125
	♂♀	16.00^{a}	16.00^{a}	16.00^{a}	0.68	0.988
	Shoulder					
	♂	11.50^{b}	10.50^{b}	16.00^{a}	1.09	0.005
	♀	9.50^{a}	10.50^{a}	8.00^{a}	0.56	0.182
	♂♀	10.50^{a}	10.50^{a}	12.00^{a}	0.77	0.698
Ash content (% DM)	Loin					
	♂	4.00^{a}	4.00^{a}	5.00^{a}	0.42	0.650
	♀	3.00^{a}	2.50^{a}	3.00^{a}	0.31	0.829
	♂♀	3.50^{a}	3.25^{a}	4.00^{a}	0.34	0.693
	Thigh					
	♂	7.00^{a}	5.50^{a}	6.50^{a}	0.33	0.164
	♀	5.50^{a}	5.50^{a}	5.50^{a}	0.22	1.000
	♂♀	6.25^{a}	5.50^{a}	6.00^{a}	0.23	0.435
	shoulder					
	♂	5.00^{a}	4.00^{a}	6.00^{a}	0.52	0.354
	♀	4.10^{a}	4.50^{a}	3.50^{a}	0.29	0.461
	♂♀	4.55^{a}	4.25^{a}	4.75^{a}	0.32	0.840

a, b and c:the means carrying the same letters on the same line are not significantly different at a threshold of 5% ; RC1, RC2,RC3 : 14% ; 16% ; 18% rates of dietary protein respectively ; FM= fresh matter ;DM=dry matter ; MSE=mean standard error ; Prob= Probability ; ♂= male ; ♀= female; ♂♀= male and female

In males, as well as in females, the lipid content of the shoulder muscle from Cavis fed ration containing 18% CP was significantly ($p<0.05$) higher than that from Cavis fed diet containng 16% and 14% CP; the shoulder from animals subjected to the ration containing 16% CP was significantly ($p<0.05$) higher than that from animals fed diet containing 14% CP. Independently of sex, the analysis reveal that the lipid content of the shoulder muscle from Cavis containing 16% and 18% CP in their rations were statistically comparable ($p>0.05$), 2.50% FM and 3.44% FM respectively, but significantly ($p<0.05$) much higher than that from animals fed diet containing 14% CP (1.00% FM).

In males, the protein contents of the loin muscle from animals fed diet containing 14% and 16% CP in their ration were comparable ($p>0.05$), 11.00% FM and 8.50% FM respectively, but significantly ($p<0.05$) lower than that from animals fed diet containing 18% CP (14.00% FM) ; on the contrary, in females or independently of sex, no significant difference ($p>0.05$) was observed between the rations pertaining to the protein content of the loin muscle. In males, the RC3 (18% CP) has led to obtaining the highest (19.00% FM) protein content in the thigh muscle, and the RC2 ration (16% CP) had the lowest protein content (17.00% FM). The analysis shows that the protein content of the thigh muscle from animals subjected to rations containing 14% and 18% CP, 18.50% FM and 19.00% FM, was statistically comparable ($p>0,05$) but significantly ($p<0.05$) higher than that from Cavis fed ration containing 16% CP (17.00% FM). In females or independently of sex, no significant difference ($p>0.05$) was observed between the rations pertaining to the protein content of the thigh muscle. In males, the protein content of the shoulder muscle from animals containing 14% and 16% CP in their rations were statistically comparable ($p>0.05$), 11.50% FM and 10.50% FM, but significantly ($p<0.05$) lower than that of Cavis fed diet containing 18% CP (16.00% FM). In females or independently of sex, no significant difference ($p>0.05$) was observed between the rations pertaining to the protein content of the shoulder muscle.

With respect to or independently of sex and regardless of the part of Cavis meat, no significant difference ($p>0.05$) between the rations was presented by the ash content.

3.2 DIFFERENT MUSCLE CONTENTS IN MACROELEMENTS FOR CAVIS AGED 8 WEEKS WITH RESPECT TO RATIONS AND SEX

Different muscle contents in macroelements for Cavis aged 8 weeks with respect to rations and sex are presented on Table 3. This table depicts that, the contents in calcium, sodium, potassium and magnesium have evolved consistently regardless of the muscle part and the sex. In fact, in males, the statistical analysis shows that the calcium content of the loin muscle from animals subjected to rations containing 14% and 16% CP were comparable ($p>0.05$) but significantly ($p<0.05$) lower than that from animals fed diets containing 18% CP. In females, the calcium content of the loin muscle from Cavis fed ration containing 18% CP were comparable ($p>0.05$) to that from animals subjected to diets containing 14% and 16% CP; but that of animals fed diet containing 14% CP was significantly ($p<0.05$) higher than that of animals fed diet containing 16% CP. Otherwise, in females the Calcium content of the thigh muscle from animals subjected to ration containing 14% CP was significantly ($p<0.05$) higher than that from Cavis fed diet containing 16% and 18% CP; that from animals fed diet containing 16% CP was significantly ($p<0.05$) higher than that of animals subjected ration containing 18% CP. Independently of sex, the calcium content of the thigh muscle from Cavis receiving 18% CP in their ration was comparable ($p>0.05$) to that of animals subjected to diet containing 14% and 16% CP; but that of animals fed diet containing 14% CP was significantly ($p<0.05$) higher than that from animals fed diet containing 16% CP. In males, the calcium content of the shoulder muscle from animals fed rations containing 14% and 16% CP was statistically comparable ($p>0.05$) but significantly ($p<0.05$) lower than that of Cavis receiving diet containing 18% CP. In females, the calcium of the shoulder muscle from Cavis subjected to ration containing 14% CP was comparable ($p>0.05$) to that of animals fed diet containing 16% and 18% CP; but that of females subjected to ration containing 16% CP was significantly ($p<0.05$) higher than that of their mates receiving diets containing 18% CP. Independently of sex, no significant difference ($p>0.05$) was observed between the treatments pertaining to calcium content of the shoulder muscle.

Otherwise, regardless of the sex, the sodium content of the loin muscle does not present any significant difference ($p>0.05$) between the rations. Independently of sex, the sodium content of the loin of Cavis subjected to ration containing 14% CP was comparable ($p>0.05$) to that of animals fed ration containing 16% and 18% ; but that of animals fed ration containing 18% CP was significantly ($p<0.05$) higher than that from animals receiving 16% CP in their feed. In females or independently of sex, the sodium content of the thigh muscle had no significant difference ($p>0.05$) between rations. In males, the sodium content of the thigh from animals fed diet containing 14% and 18% CP were comparable ($p>0.05$) but significantly ($p<0.05$) higher than

that from animals subjected to ration containing 16% CP. Otherwise, regardless of the sex, the sodium content of the shoulder presented no significant difference (p>0.05) between the rations.

In males, the potassium content of the loin muscle from animals receiving 14% and 18% CP in their diet were comparable (p>0.05) but significantly (p<0.05) higher than that from animals fed rations containing 16% CP. Meanwhile, in females, the analysis reveals that the potassium content of the loin muscle from animals fed rations containing 14% and 16% CP were statistically comparable (p>0.05) but significantly (p<0.05) higher than that from animals fed diet of 18% CP. Independently of sex, the potassium content of the loin muscle presented no significant difference (p>0.05) between the rations. In males, the potassium content of the thigh from animals subjected to rations containing 14% CP was significantly (p<0.05) higher than that from Cavis fed diet containing 16% and 18% CP ; but that from animals fed ration containing 16% CP was significantly (p<0.05) higher than that of Cavis fed diets containing 18% CP. In females, the analysis shows that the potassium content of the thigh muscle from animals fed rations composed of 14% CP was significantly (p<0.05) higher than that of Cavis subjected to diets of 16% and 18% CP ; but the potassium content of the thigh muscle of animals fed diet of 18% CP was significantly (p<0.05) higher than that of cavis subjected to diet of 16% CP. Independently of sex, the analysis reveals that the potassium content of the thigh muscle from animals fed rations containing 16% and 18% CP were comparable (p>0.05) but significantly (p<0.05) lower than that from cavis fed diet containing 14% CP. In males, the analysis shows that potassium content of the shoulder muscle from animals subjected to rations containing 14% and 18% CP were statistically comparable (p>0.05) but significantly (p<0.05) higher than that from cavis fed diet containing 16% CP. Meanwhile, in females, the statistical analysis reveal that the potassium content of the shoulder muscle from animals fed diets of 16% and 18% CP were comparable (p>0.05) but significantly (p<0.05) higher than that from cavis fed diet containing 14% CP. Independently of sex, the potassium content presented no significant difference (p>0.05) between the rations.

Table 3 : Different muscle contents in some macroelements for Cavis aged 8 weeks with respect to rations and sex

Characteristics		Treatments			SEM	Prob
		RC1(14%CP)	RC2(16%CP)	RC3(18%CP)		
Calcium content (mg/g of dry matter)	Loin					
	♂	16.50^{b}	15.50^{b}	21.00^{a}	1.09	0.005
	♀	14.00^{a}	10.50^{b}	12.50^{ab}	0.72	0.007
	♂♀	15.25^{a}	13.00^{a}	16.75^{a}	1.02	0.347
	Thigh					
	♂	35.50^{a}	23.50^{b}	33.00^{a}	2.33	0.002
	♀	30.50^{a}	27.00^{b}	22.50^{c}	1.50	0.009
	♂♀	33.00^{a}	25.25^{b}	27.75^{ab}	1.45	0.008
	Shoulder					
	♂	23.00^{b}	20.95^{b}	31.00^{a}	2.12	0.009
	♀	18.50^{ab}	21.00^{a}	18.00^{b}	0.65	0.006
	♂♀	20.75^{a}	20.50^{a}	24.50^{a}	1.35	0.437
Sodium content (mg/g of dry matter)	Loin					
	♂	50.00^{a}	67.00^{a}	138.00^{a}	17.95	0.031
	♀	63.00^{a}	29.00^{a}	66.00^{a}	8.40	0.090
	♂♀	56.50^{ab}	48.00^{b}	102.00^{a}	10.63	0.007
	Thigh					
	♂	158.00^{a}	70.00^{b}	184.00^{a}	23.08	0.035
	♀	94.00^{a}	123.00^{a}	122.50^{a}	7.64	0.226
	♂♀	126.00^{a}	96.50^{a}	153.25^{a}	12.15	0.164
	Shoulder					
	♂	107.00^{a}	54.00^{a}	76.00^{a}	11.92	0.194
	♀	50.00^{a}	75.00^{a}	49.00^{a}	8.32	0.452
	♂♀	78.47^{a}	64.47^{a}	62.47^{a}	7.64	0.682
Potassium content (mg/g of	Loin					
	♂	7.33^{a}	4.20^{b}	7.62^{a}	0.76	0.014
	♀	3.11^{a}	4.19^{a}	1.03^{b}	0.56	0.006
	♂♀	5.25^{a}	4.00^{a}	4.25^{a}	0.71	0.785

dry matter)	Thigh					
	♂	13.00[a]	6.00[b]	2.50[c]	1.96	0.000
	♀	10.00[a]	6.00[c]	6.97[b]	0.76	0.000
	♂♀	11.50[a]	6.00[b]	4.73[b]	1.00	0.001
	Shoulder					
	♂	5.50[a]	1.50[b]	6.50[a]	0.99	0.011
	♀	1.50[b]	4.50[a]	4.00[a]	0.62	0.026
	♂♀	3.50[a]	3.00[a]	5.25[a]	0.58	0.276

a, b and c:the means carrying the same letters on the same line are not significantly different at a threshold of 5% ; RC1, RC2,RC3 : 14% ; 16% ; 18% rates of dietary protein respectively ; MF= fresh matter ;DM=dry matter ; MSE=mean standard error ; Prob= Probability ; ♂= male ; ♀= female; ♂♀= male and female

3.3 DIFFERENT MUSCLE CONTENTS IN OLIGOELEMENTS FOR CAVIS AGED 8 WEEKS WITH RESPECT TO RATIONS AND SEX

Table 4 presents different muscle contents in oligoelements for Cavis aged 8 weeks with respect to rations and sex**.** The table depicts that, with respect to or regardless of sex and the portion of meat, no significant difference (p>0.05) was observed between the treatments pertaining to iron content.

Otherwise, in males, the Zn content of the loin muscle from Cavis of batch RC3 was significantly (p<0.05) higher than that of animals from batches RC1 and RC2; that of cavis from batch RC1was significantly (p<0.05) higher than that of animals from batch RC2. In females, the Zn content of the loin from animals of batches RC1 and RC3 were comparable (p>0.05) but significantly (p<0.05) higher than that from animals of batch RC2. Independently of sex, the Zn content of the loin from animals of batches RC1 and RC2 were statistically comparable (p>0.05) but significantly (p<0.05) lower than that of cavis from batch RC3. In males, the Zn content of the thigh of cavis from batch RC3 was significantly (p<0.05) higher than that from animals of batches RC1 and RC2; the Zn proportion of the thigh of cavis from batch RC1 was significantly (p<0.05) higher than that of animals from batch RC2. In females and independently of sex, the Zn content of the thigh muscle from animals of batches RC1 and RC2 were statistically comparable (p>0.05) but significantly (p<0.05) lower than that from batch RC3. In males, the Zn content of the shoulder of animals fed rations containing 18% CP was significantly (p<0.05) higher than that of their mates fed diets containing 14% and 16% CP ; that from animals fed rations containing 16% CP was significantly (p<0.05) higher than that of cavis fed diet containing 14% CP. In females, the analysis shows that the Zn content of the shoulder from animals subjected to diets containing 18% CP was significantly (p<0.05) higher than that of cavis subjected to diets containing 14% and 16% CP; the Zn proportion in the shoulder of animals subjected to rations containing 14% CP was significantly (p<0.05) higher than that of cavis fed diets containing 16% CP. Independently of sex, the Zn content of the shoulder of animals fed rations containing 14% and 16% CP were statistically comparable (p>0.05) but significantly (p<0.05) lower than that from cavis fed diets of 18% CP.

Table 4 : Different muscle contents in oligoelements for Cavis aged 8 weeks with respect to rations and sex

Characteristics	Sex	Treatments			SEM	Prob
		RC1(14%CP)	RC2(16%CP)	RC3(18%CP)		
Iron content (mg/g DM)	Loin					
	♂	1.00[a]	1.00[a]	2.00[a]	0.21	0.650
	♀	0.50[a]	0.50[a]	1.00[a]	0.21	0.650
	♂♀	0.75[a]	0.75[a]	1.50[a]	0.17	0.121
	Thigh					
	♂	1.50[a]	2.00[a]	2.00[a]	0.17	0.465
	♀	1.50[a]	1.50[a]	2.00[a]	0.21	0.650
	♂♀	1.50[a]	1.75[a]	2.00[a]	0.13	0.323
	shoulder					
	♂	0.96[a]	1.23[a]	2.00[a]	0.21	0.650
	♀	0.74[a]	1.37[a]	1.14[a]	0.17	0.465
	♂♀	1.00[a]	1.25[a]	1.50[a]	0.13	0.323

Zinc content (mg/g DM)	Loin					
	♂	0.34[b]	0.07[c]	6.04[a]	1.27	0.009
	♀	1.36[a]	0.27[b]	1.90[a]	0.37	0.004
	♂♀	0.85[b]	0.17[b]	3.97[a]	0.65	0.005
	Thigh					
	♂	1.89[b]	0.28[c]	10.84[a]	2.14	0.009
	♀	0.86[b]	0.70[b]	3.77[a]	0.63	0.026
	♂♀	1.50[b]	0.50[b]	7.50[a]	1.12	0.005
	shoulder					
	♂	0.15[c]	3.48[b]	8.67[a]	1.57	0.002
	♀	2.33[b]	0.23[c]	5.92[a]	1.12	0.005
	♂♀	1.00[b]	1.75[b]	7.25[a]	0.94	0.001

a, b and c:the means carrying the same letters on the same line are not significantly different at a threshold of 5% ; RC1, RC2,RC3 : 14% ; 16% ; 18% rates of dietary protein respectively ; FM= fresh matter ;DM=dry matter ; MSE=mean standard error ; Prob= Probability ; ♂= male ; ♀= female; ♂♀= male and female

4 DISCUSSION

4.1 EFFECT OF THE LEVEL OF DIETARY PROTEIN ON WATER, LIPIDS, PROTEINS AND ASH CONTENTS OF CAVIS MEAT

In this study, the water content of the loin muscle was the highest in cavis subjected to rations containing 16% CP, either 92.00% was obtained; this value is higher than that of 72.59% reported by [17] with loin muscle from cavis receiving 10% of cassava leaves flour in their ration. The highest water content of the thigh muscle that is 91.00% was registered in animals fed rations containing 18% CP, meanwhile, no significant difference (p>0.05) was observed between this value and that of 88.50% registered with the thigh muscle of cavis fed ration containing 16% CP. Nevertheless, this rate is higher than the value of 74.31% obtained by [17] with the thigh muscle from cavis receiving 8% of cassava leaves flour in their ration. The highest water content of the shoulder muscle that is 92.00% was obtained in cavis fed ration containing 14% CP, meanwhile, no significant difference (p>0.05) was observed between this value and that of 71.00% registered with shouldre muscle of animals subjected to rations containing 16% CP. Nevertheless, this rate is higher than that of 72.93% reported by [17] with shoulder muscle from cavis receiving 8% of cassava leaves flour in their ration. Otherwise, the water content of muscles has been higher in males as in females ; in fact, they varied from 80.00% to 91.00% in males and from 51.00% to 94.00% in females. The same observations were made by [17] in cavis receiving cassava leaves flour in their rations. These authors obtained varying water contents of muscles from 70.45% to 75.39% in males and from 65.56% to 73.23% in females. On the contrary, comparable results for the two sexes were observed by [18] ; in fact, these authors obtained water contents of 75.05% in ewe and 75.96% in the ram at the level of the *Longissimus dorsi* muscle. Also, the differences observed in this study could be as a result of the animal species. Likewise, all the rates obtained in cavis during this study, are higher than values of 70% and 67% respectively registered by certain authors [19 ; 20 ; 21] with muscles fom rabbit and by others [20; 21] with chicken muscles.

The highest lipid content of the loin muscle, that is 2.150% FM was obtained from cavis subjected to ration containing 14% CP ; meanwhile, this value is statistically comparable (p>0.05) to that of 1.75% MF registered with the loin muscle of cavis fed ration containing 16% CP ; it is nevertheless lwer than that of 7.27% FM reported by [17] with the loin muscle from cavis receiving 0% of cassava leaves flour in their ration. The highest lipid content of the thigh muscle, that is 3.49% FM, was registered in animals fed rations containing 18% CP ; meanwhile, this value is statistiaclly comparable (p>0.05) to that of 3.00% MF noted at the level of the thigh muscle from animals subjected to rations containing 16% CP ; it is nevertheless lower to the rate of 8.17% FM obtained by [17] with the thigh muscle from cavis receiving 0% cassava leaves flour in their ration. The highest lipid content of shoulder muscle, that is 3.44% FM, was obtained in cavis fed with ration RC3 (18% CP) ; meanwhile, this value is statistically comparable (p>0.05) to that of 2.50% FM registered with the shoulder muscles from animals fed ration containing 16 % CP ; nevertheless, it is lower than that of 12.90% FM reported by [17] with the shoulder muscle from animals receiving 10% of cassava leaves flour in their ration. The low rates observed during this study, will be in comparison with the results of [17] in cavis aged 22 weeks, linked to age of animals at slaughter. In fact, the lipid content of the muscle increases with age and weight of the animal [22]. Therefore, when body weight increases from birth to slaughter of the animals, variations in the composition of the carcass are observed [23]. In the same light, [23] have mentioned that the increase in slaughter weight engenders a drop in the proportions of muscle and bone, and an increase in the fat content of the carcass. According to [22], the lipid content of the muscle increases with increase in weight, whether or not the animals are fed at will or restricted feeding.

Likewise, the highest lipid content of muscles was observed in males as in females ; in fact, they were varying on a dry matter basis (MF) from 0.36% to 3.22% in males and from 1.50% to 4.10% in females. The same observeation were made on the same basis by [17] who reported that the lipid content of cavis muscles varied from 5.26% to 12.73% in males and from 6.24% to 15.95% in females. On their part, [18] had on the same basis reported on the intramuscular lipid content of the *Longissimus dorsi* varying from 2,74% to 3,54% in ewe of the Lacha species and from 1,87% to 3,15% in rams of the same species. According to [24], females have a lower growth potengtial than males entirely, but have a more rapid adipose tissue development. It is therefore at the same liveweight that females present high adipose deposits than males [24]. In the same light, studies carried out by [17], on cavis muscles on the same basis, have shown that the lipid content varied from 5.26% to 12.73% in males and from 6.24% to 15.95% in females. The higher lipid content in female muscles is explained by the effect of hormones such as oestrogenes [24]. In fact, oestrogenes stimulate the fatty mass in the pelvian cavity and the thigh.

In the present study, the higher protein content in the loin muscle, that is , 10.50%MF, was obtained from cavis receiving ration containing 18% CP ; meanwhile, it is statistically comparable ($p>0.05$) to the value of 8.00% FM of the loin muscle of cavis subjected to ration containing 16% CP. Nevertheless, this value is lower than that of 21.49%FM reported by [17] with longe muscle from cavis receiving 10% of cassava leaves flour in their ration. The protein content of the thigh muscle, either 16.00%FM, was registered in all the animals regardless of the ration. This rate is nevertheless close to that of 16.73%FM obtained by [17] with the thigh muscle from cavis receiving 10% of cassava leaves flour in their ration. The highest protein of the shoulder muscle, either 12.00%FM, was obtained from cavis fed rations containing 18% CP; meanwhile, this value is statistically comparable ($p>0.05$) to that of 10.50%FM of shoulder muscle from cavis fed ration containing16% CP. Nevertheless, this value is lower than that of 15.10%FM reported by [17] with the shoulder muscle from cavis receiving 10% of cassava leaves flour in their ration. Likewise, the protein content was highest in males than in females; in fact, they varied from 8.50%MF to 19.00%MF in males and from 6.59%MF to 15.00%FM in females. The same observation was made by [25] who registered the protein rate of pork expressed as a percentage of the dry extract, significantly higher ($p<0.001$) in males (88.70%) than females (86.50%). On the contrary, [17] reported that the protein content of muscles is not influenced by the animal's sex. In fact, these authors have obtained oscillating muscle protein of cavis between 13.64%MF and 21.68%MF in males and 13.58%MF and 22.89%MF in females; [26] have equally registered rates of muscular proteins of pork of 22.78%MF in males and 22.87%MF in females ; on their part, found out that there was no significant difference ($p>0.05$) in the pork protein in males (21.09%MF) and in females (21.27%MF). The protein content at the level of the loin, either 18.35%MF is closer to that of 18.20%MF and of 18% MF obtained respectively by [28] with *Semispinalis* muscle of cavis and by [21] with sheep muscles ; the value of 19.43%MF obtained from the thigh muscle is closer to that of 20%MF and of 19.5-20%MF respectively, registered by [21] with beef muscles and by other authors [20]; [21] with chicken muscle ; while the value of 17.34%MF obtained from the shoulder muscle is comparable to that of 17%MF and of 16.60%MF respectively, registered by [20] in rams and by [19] in pigs. Protein variations observed at the level of different muscles could translate the implication of protides in the normal functioning of the tissues in metabolic processes [24].

In this study, the highest ash content, that is 4.00%DM, was obtained in the cavis subjected to ration containing 18% CP; meanwhile, this value is statistically comparable ($p>0.05$) to that of 3.25%DM of the loin muscle of cavis subjected to ration containing 16%CP. This value, nevertheless is closer to that of 4.01%DM reported by [15] with loin muscle from cavis receiving 8% of cassava leaves flour in their ration. The highest ash content of the thigh muscle, that is 6.25%DM, was registered in animals fed ration containing 14% CP ; meanwhile, it is statistically comparable ($p>0.05$) to that of 5,50%DM of thigh muscle fed ration containing 16%CP. This rate is nevertheless comparable to that of 5.42%DM obtained by [15] with thigh muscle from cavis receiving 10% of cassava leaves flour in their ration. The highest ash content of the shoulder muscle, that is 4.75%DM, was obtained from cavis fed ration containing 18% CP; meanwhile, it is statistically comparable ($p>0.05$) to the value of 4.25%DM of shoulder muscle from cavis fed ration containing 16% CP. This value is closer to that of 4.71% DM reported [15] with shoulder muscles from cavis receiving 8% of cassava leaves flour in their ration. Likewise, the ash content of muscles has been higher in males than in females; in fact, they varied from 4.00%DM to 7.00%DM in males and from 2.50%DM to 5.50%DM in females. On the contrary, the investigations of [15] have revealed that there is no significant difference ($p>0.05$) between the two sexes pertaining to the ash content of the muscles ; in fact, this author registered varying ash contents from 4.11%DM to 5.64%DM in males and from 3.90%DM to 5.79%DM in females. In this study, regardless of the sex or muscle type, there was no significant difference ($p>0.05$) observed between the ash content of the cavis muscle; these observations were also made by [15].

4.2 MUSCLE CONTENTS IN MACROELEMENTS FOR CAVIS AGED 8 WEEKS WITH RESPECT TO RATIONS AND SEX

In this study, the highest calcium content of the loin muscle, that is 16.75mg/gDM, was obtained from cavis subjected to ration containing 18% CP ; meanwhile, this value is statistically comparable ($p>0.05$) to that of 13.00mg/gDM noted with the loin muscle from cavis subjected to ration containing 16% CP. Nevertheless, this value is lower than that of 20.21mg/gDM obtained [15] with the loin muscle from cavis receiving 10% of cassava leaves flour in their ration. The highest calcium content of the thigh muscle, that is 33.00mg/gDM was registered in animals subjected to rations containing 14% CP; meanwhile, this value is statistically comparable ($p>0.05$) to that of 27.75mg/gDM noted with thigh muscles from cavis subjected to rations containing 18% CP ; the latter is statistically comparable ($p>0.05$) to that of 25.25mg/g/DM obtained with thigh muscles from rations containing 16%CP. This rate is higher than that of 20.67mg/gDM obtained by [15] with thigh muscles from cavis receiving 12% of cassava leaves flour in their ration. The highest calcium content of the shoulder muscle, either 24.50mg/gDM, was obtained in cavis fed ration containing 18%CP; meanwhile, this value is statistically comparable ($p>0.05$) to that of 20.50mg/gDM noted with shoulder muscles from cavis fed rations containing 16%CP. These values are higher than that of 13.66mg/gDM reported by [15] with the shoulder muscle from cavis receiving 10% of cassava leaves flour in their ration. Likewise, the calcium contents of the muscles has been higher in males than in females ; in fact, it varies from 15.50mg/gDM to 35.50mg/gDM in males and from 10.50 mg/gDM to 30.50 mg/gDM in females. Contrary results were registered by [15] who reported calcium contents of muscles varying from 3.37 mg/gDM to 22.19 mg/gDM in males and from 3.40 mg/gDM to 36.95 mg/gDM in females. The calcium content noted with the loin muscle in this present study, either 16.75mg/gDM is closer to the value of 17mg/gDM and 11-19mg/gDM respectively obtained [19] with beef muscle by [29] with chicken ; the calcium content registered with the shoulder muscle, in the course of this trial, either 20.50mg/gDM, is comparable to the value of 20mg/gDM reported by [21] with rabbit muscle.

The highest sodium content of the loin muscle in the present study, either 102.00mg/gDM, was obtained from cavis subjected to rations containing 18%CP ; meanwhile, this value is statistically comparable ($p>0.05$) to that of 56.50 mg/gDM registered with loin muscle from cavis fed ration containing 14%CP. The former value is nevertheless higher than that of 87.45 mg/gDM and of 52 mg/gDM respectively reported by [15] with muscle from cavis receiving 12% of cassava leaves flour and by [19] with beef muscle. The highest sodium content of the thigh muscle, either 153.25mg/gDM, was registered from animals subjected to rations containing 18%CP; meanwhile, no significant difference ($p>0.05$) was observed between the rations pertaining to the sodium content of the thigh muscle. This rate is nevertheless higher than that of 105.82mg/gDM obtained by [15] with thigh muscle from cavis receiving 12% of cassava leaves flour in their ration and those of 70mg/gDM, 76 mg/gDM, 78 mg/gDM and 65 mg/gDM reported by [19], respectively with ram muscle, chicken, guinea fowl and pig. The highest sodium content of the shoulder muscle, either 78.47mg/gDM, was obtained in cavis fed ration containing 14%CP, meanwhile, no significant difference ($p>0.05$) was observed between the rations. This value is nevertheless lower than that of 128.58mg/gDM reported by [15] with the shoulder muscles of cavis receiving 12% of cassava leaves flour in their ration. Likewise, the sodium content of muscles was higher in males than in females ; in fact, it varied from 50.00mg/gDM to 184.00mg/gDM in males and from 29.00mg/gDM to 123.00mg/gDM in females. The same observations were made by [15] who registered varying sodium contents of muscles from 68.77mg/gDM to 161.95mg/gDM in males and 66.93mg/gDM to148.01mg/gDM in females.

In the present study, the highest potassium content of the loin muscle, either 5.25mg/gDM, was obtained from cavis receiving 14%CP in their ration ; meanwhile, no significant difference ($p>0.05$) was observed between the three (03) rations pertaining to potassium content of the loin muscle. Nevertheless, this value is comparable to that of 3.82mg/gDM reported by [15] with the loin muscle from cavis receiving 12% of cassava leaves flour in their ration. The highest potassium content of the thigh muscle, either 11.50mg/gDM was observed in cavis fed ration containing 14%CP ; it is statistically ($p<0.05$) higher than that of 6.00mg/gDM and 4.73mg/gDM noted with the thigh muscles from cavis fed rations containing 16% and 18%CP respectively. This rate is close to the value of 11.97mg/gDM obtained by [15] with the thigh muscle from cavis receiving 8% of cassava leaves flour in their ration, but higher than that of 5.03mg/g/DM registered by this same author with thigh muscles from cavis consuming rations containing 10% of cassava leaves flour. The highest potassium content of the shoulder muscle, that is 5.25mg/gDM, was obtained in cavis fed ration containing 18%CP ; meanwhile, no significant difference ($p>0.05$) was observed between the three (03) pertaining to potassium content of the shoulder muscles. This value is lower than that of 9.80mg/gDM reported by [15] with the shoulder muscle from cavis receiving 10% of cassava leaves flour in their ration. Likewise, it varied from 1.50mg/gDM to 13.00mg/gDM in males and 1.00mg/gDM to 10.00mg/gDM in females. Contrary observations were made [15] who reported variations from 3.89mg/gDM to 20.76mg/gDM in males and 3.03mg/gDM to 23.95mg/gDM in females.

4.3 MUSCLE CONTENTS IN OLIGOELEMENTS FOR CAVIS AGED 8 WEEKS WITH RESPECT TO RATIONS AND SEX

In this study, the highest iron content of loin, thigh and shoulder muscles that is 1.50mg/gMS, 2.00mg/gMS and 1.50mg/gMS respectively were registered with cavis fed ration containing 18%CP ; meanwhile, no significant difference ($p>0.05$) was observed between the three rations pertaining to iron content of the different muscle parts. The iron content of the loin muscle (1,50 mg/gDM) is comparable to the value reported by [29] (0.8-2.3 mg/gDM) and by [30] (0.9-1.2 mg/gDM) with the veal muscle ; by [30] (1.1-1.5 mg/gDM) with the ram muscles; by [29] with the rabbit muscles (1.1-1.3 mg/gDM) and from chicken (0.6-2.0 mg/gDM). The iron content of the thigh muscle (2.00 mg/gDM) is higher than that registered by [21] (1.50 mg/gDM) with sheep muscles; by [32] (1.6 mg/gDM) with the ram muscles and by [29] (1.4-1.7 mg/gDM) with pig muscles. The iron content of the shoulder muscle (1.50 mg/gDM) is comparable to that registered by [19] (1.30 mg/gDM) with feasant muscle. Likewise, the iron contents of muscles were higher in males than in females; in fact, it varied from 1.00 mg/gDM to 2.00 mg/gDM in males and from 0.50 mg/gMS to 2.00 mg/gDM in females. The highest (3.97 mg/gDM) Zn content of the loin muscle , in the present study was obtained from cavis fed 18%CP. This rate is closer to the value of 4.50mg/gDM obtained by [15] with the loin muscle from cavis fed 8% of cassava leaves flour in their ration, and from 3.5-6.8 mg/gDM and 2.6-4 mg/gDM registered by [30] respectively from beef and veal muscles. Likewise, it higher than the value of 2.90 mg/gDM reported by [31] with the ram muscle. The highest Zn content of the thigh and shoulder muscles respectively from 7.50mg/gDM and 7.25mg/gDM were registered in animals fed rations containing 18%CP. These values are higher than that of 5.93mg/gDM and 6.62mg/gDM obtained by [15] respectively with the thigh and shoulder muscles from cavis receiving 12% of cassava leaves flour in their ration. Likewise, the Zn contents of the muscles were higher in males than in females; in fact, it varied from 0.07mg/gDM to 10.84mg/gDM in males and from 0.23mg/gDM to 5.92mg/gDM in females.

5 CONCLUSION

From this study, it springs out that:

- The level of dietary proteins have influenced the chemical characteristics of cavis meat;
- The ration containing 16%CP has seemingly ameliorated the chemical composition of cavis meat in the western high plateau of Cameroon than the other rations of 14%CP or 18%CP.

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