Nutritional Quality Evaluation of Rabbit Meat (Flemish Giant Breed) Corelated with Fatty Acids Content

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Abstract

The aim of this study was to assess the nutritional quality of rabbit meat (Flemish Giant breed) in terms of content of fatty acids. The biological material consisted of 42 rabbits (17 females and 15 males) from which were collected *Longissimus dorsi*, *Semimembranosus* and *Triceps Brachii* muscles immediately after slaughter. The samples were vacuum packaged, frozen at -80^{o}C, and immediately after thawing have been minced and freeze-dried at -110^{o}C (using lyophilizer CoolSafe Scanvac). The content in fatty acids was followed through NIRS methodology, using FOSS 6500 spectrophotometer, by gender. Was determined: the saturated fatty acids: C14:0 (Myristic acid), C15: 0 (Pentadecanoic acid), C16: 0 (Palmitic acid), C17: 0 (Heptadecanoic acid) and C18: 0 (Stearic acid); monounsaturated fatty acids: Palmitoleic acid (C16: 1n-7), Vaccenic acid, cis-isomer of oleic acid (C18: 1n-7) and oleic acid (C18: 1n-9) and the polyunsaturated fatty acids (ω3 and ω6): C18: 2n-6 (linoleic acid), C18: 3n-3 (Linolenic acid), C20: 2n-6 (Eicosadienoic acid), C20: 3n-6 (Eicosatrienoic acid), C20: 4n-6 (arachidonic acid), C20: 5n-3 (Eicosapentaenoic acid), C22: 4n-6 (Docosatetraenoic acid), C22: 5n-3 (Docosopentaenoic acid) and C22: 6n- 3 (docosahexaenoic acid). The results were statistically analyzed, including analysis of variance (ANOVA) and significant differences between genders were observed.

Keywords: meat, polyunsaturated fatty acids, rabbit.

1. Introduction

Rabbit meat is important sources for protein (balanced in essential amino acids), fat (rich in essential fatty acids), minerals and vitamin and other nutrients [1]. Meat in itself can be considered a functional food to the extent that it naturally contains many nutritive elements essential for humans, such as high biological value protein, fats, vitamins (B group, D and E), , and minerals [2, 3].

Rabbit meat is an interesting white meat ideal for modern consumers who are increasingly aware of the link between diet and health and see it as a valuable way to improve the quality of their lives [4]. Rabbit meat, together with its high protein content, provides the greatest quantity of vitamin B12 among the most common meats such as pork, beef, veal and chicken. It is also an excellent source of P, K, Zn and Se, and it is favorably low in Na [5, 6]. In addition, rabbit meat can undoubtedly be considered a lean source (about 8.5% of fat, considering the whole carcass) with a favorable fatty acid profile which can be further improved through diet [7, 8].

In recent years, the consumer demands for healthier meat and meat products with reduced level of fat, cholesterol, decreased contents of sodium chloride and nitrite, improved composition of fatty acid profile and incorporated health enhancing ingredients are rapidly increasing worldwide. Some supplementation with Spirulina increased the level of linolenic acid content and Thyme improved the oxidative stability of raw and freeze-dried rabbit meat [9].

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The aim of this study was to assess the nutritional quality of rabbit meat (Flemish Giant breed) in terms of content of fatty acids.

2. Materials and methods

Determination of fatty acids of rabbit meat occurred in Meat Technology Laboratory, belonging to the Institute of Animal Science and Technology of the Polytechnic University of Valencia, Spain. This paper is part of a broader study aimed to comparative characterization of rabbit meat (Flemish Belgian breed) and hares meat (*Lepus Europaeus* Pallas). Biological material consisted of a total of 42 rabbits (17 females and 15 males), on which were collected following muscle groups: *Longissimus dorsi*, *Semimembranosus* and *Triceps brachii*. The rabbits had an average body weight of 11.5 kg being at the age of reproductive maturity (adults: 11-12 months). They were fed with fodder and water restrictions.

Fatty acids were determined using NIRS methodology (spectrophotometer FOSS 6500).

After freeze-dried muscle samples reached room temperature (22-24^{o}C), were scanned between 1100 and 2500 nm. Sample measurements were taken in circular cups with quartz windows of 3.8 cm diameter. A sample cup was filled, placed in the NIRS unit and two spectra were obtained, rotating at 90 degrees the sample cup (refilled with the same sample, the procedure was repeated to obtain four spectra of each sample, and then were averaged).

Were determined following saturated fatty acids: C14:0 (myristic acid), C15:0 (pentadecanoic acid), C16:0 (palmitic acid), C17:0 (heptadecanoic acid) and C18:0 (stearic acid). Of monounsaturated fatty acids were determined: palmitoleic acid (C16: 1n-7), vaccenic acid, cis-isomer of oleic acid (C18:1n-7) and oleic acid (C18: 1n-9). Also were determined and the content of nine polyunsaturated fatty acids (ω3 and ω6): C18: 2n-6 (linoleic acid), C18: 3n-3 (linolenic acid), C20: 2n-6 (eicosadienoic acid), C20: 3n-6 (eicosatrienoic acid), C20: 4n-6 (arachidonic acid), C20: 5n-3 (eicosapentaenoic acid), C22:4n-6 (docosatetraenoic acid), C22:5n-3 (docosopentaenoic acid) and C22:6n-3 (docosahexaenoic acid). The first stage occurred usual statistical estimators calculation: arithmetic mean ($\bar{x}$), standard deviation of the mean ($S_{\bar{x}}$), variance (S^2) and coefficient of variation (V%). To test the statistical significance of differences by gender, we used ANOVA Single Factor algorithm included in Microsoft Excel software package ($p<0.05$; $p<0.01$;$p<0.001$).

3. Results and discussion

In continuation are presented the mean for the content of fatty acids in muscles *Longissimus dorsi, Semimembranosus* and *Triceps brachial* collected from rabbits (Flemish Giant breed) and statistical estimators calculated comparatively, by gender.

For *Longissimus dorsi* muscles the highest average value for the polyunsaturated fatty acids has been shown for C18-2n-6 linoleic acid (231.96 mg/100 g meat). For monounsaturated fatty acids most significant average amount was found to oleic acid (C18: 1n-9), with an average of 308.66 mg / 100 g meat, followed by palmitoleic acid (C16:1n-7) with the average amount of 50.06 mg/100 g meat. The lowest mean value was observed for vaccenic acid (C18: 1n-7). This recorded an amount of 18.19 mg/100 g meat (Table 1).

Among saturated fatty acids determined, the highest average value was recorded for palmitic acid, 345.05 mg/100 g meat (Table1.).

These average values of fatty acids obtained in *Longissimus dorsi* muscles were relatively similar (a little higher) to those observed in specialized articles from abroad, which have followed the same parameters on the medium breeds' rabbit meat [10-12].

The coefficient of variation calculated for *Longissimus dorsi* muscles, have expressed an relatively homogeneous population, V% falling between 10-20% for five fatty acids (C14:0, C16:0, C16:1n-7, C18:1n-9 and C18:3n-3) and a very homogeneous population, V% is less than 10% for twelve fatty acids (C15:0, C17:0, C18:0, C18:1n-7, C18:2n-6, C20:2n-6, C20:3n-6, C20:4n-6, C20:5n-3, C22:4n-6, C22:5n-3 and C22:6n-3).

In Table 2 is shown the statistical significance of differences in the fatty acid composition for *Longissimus dorsi* muscles, by gender. Thus, there were significant differences in the level of saturated fatty acids heptadecanoic acid (C17:0) and stearic acid (C18:0). Significant differences were also observed for monounsaturated fatty acid C18: 1n-9 (oleic acid) and polyunsaturated fatty acids (linoleic acid and arachidonic acid).

Table 1. The average in fatty acids content (mg/100 g meat) for *Longissimus Dorsi* muscles

Fatty acids		N.	$\bar{x} \pm S_{\bar{x}}$	S^2	V%	Min.	Max.
Saturated Fatty acids	C14:0	42	32.00±4.60	254.21	14.38	16.81	54.19
	C15:0	42	5.86±0.58	4.03	9.89	4.01	8.72
	C16:0	42	345.05±48.91	28.86	14.18	194.53	596.77
	C17:0	42	7.16±0.57	3.91	7.97	5.11	10.17
	C18:0	42	86.91±6.40	491.08	7.36	66.35	118.55
Monounsaturated fatty acids	C16:1n-7	42	50.06±9.60	11.57	19.18	19.99	97.91
	C18:1n-7	42	18.19±1.80	39.03	9.92	12.77	27.08
	C18:1n-9	42	308.66±36.82	16.31	11.93	184.11	491.59
Polyunsaturated fatty acids	C18:2n-6	42	231.96±18.66	46.38	8.04	170.94	325.80
	C18:3n-3	42	19.66±2.42	70.11	12.30	11.96	31.87
	C20:2n-6	42	3.11±0.17	0.36	5.55	2.48	3.93
	C20:3n-6	42	3.64±0.12	0.18	3.37	2.95	4.23
	C20:4n-6	42	53.79±0.91	9.95	1.69	50.19	59.09
	C20:5n-3	42	9.74±0.40	1.89	4.08	7.40	11.06
	C22:4n-6	42	14.45±0.12	0.17	0.83	13.87	15.03
	C22:5n-3	42	8.57±0.19	0.44	2.24	7.69	9.46
	C22:6n-3	42	23.56±0.72	6.22	3.06	19.87	26.68

Table 2. The statistical significance of differences in fatty acids content of *Longissmus dorsi* muscles

Fatty acids		*Longissmus dorsi*
Saturated fatty acids	C14:0	$\hat{F}$ =3.908; $F_{5\%}(1;40)$=3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C15:0	$\hat{F}$ =4.882; $F_{5\%}(1;40)$=3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C16:0	$\hat{F}$ =4.440; $F_{5\%}(1;40)$=3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C17:0	$\hat{F}$ =7.774; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{5\%} < \hat{F} < F_{1\%} \Rightarrow$*
	C18:0	$\hat{F}$ =5.025; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{5\%} < \hat{F} < F_{1\%} \Rightarrow$*
Monounsaturated fatty acids	C16:1n-7	$\hat{F}$ =3.750; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C18:1n-7	$\hat{F}$ =3.777; $F_{5\%}(1;40)$=3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C18:1n-9	$\hat{F}$ =5.175; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{5\%} < \hat{F} < F_{1\%} \Rightarrow$*
Polyunsaturated fatty acids	C18:2n-6	$\hat{F}$ =5.003; $F_{5\%}(1;40)$= 3.963; ; $F_{1\%}$=6.971; $F_{5\%} < \hat{F} < F_{1\%} \Rightarrow$*
	C18:3n-3	$\hat{F}$ = 4.131 ; $F_{5\%}(1;40)$=3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C20:2n-6	$\hat{F}$ =1.141; $F_{5\%}(1;40)$=3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C20:3n-6	$\hat{F}$ =3.912; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C20:4n-6	$\hat{F}$ =7.100; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{5\%} < \hat{F} < F_{1\%} \Rightarrow$*
	C20:5n-3	$\hat{F}$ =1.555; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C22:4n-6	$\hat{F}$ =11.012; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694. $F_{5\%} < \hat{F} < F_{1\%} < F_{0.1\%} \Rightarrow$**
	C22:5n-3	$\hat{F}$ =0.429; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s
	C22:6n-3	$\hat{F}$ =0.046; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%} \Rightarrow$n.s

Distinctly significant differences were found just for polyunsaturated fatty acid C22:4n-6 (docosatetraenoic acid). For the others fatty acids statistical differences were (n.s.) not significant (Table 2).

The average content of saturated fatty acids for *Semimembranosus* muscles has registered the highest values (499.65 mg/100 g) for palmitic acid (Table 3). Regarding the average content of monounsaturated fatty acids, the highest value was

highlighted for oleic acid, with 485.43 mg/100 g meat, followed by palmitoleic acid, with 79.66 mg/100 g meat. Polyunsaturated fatty acids highest average amount was observed, linoleic acid (C18:2n-6) 343.15 mg/100 g meat, followed by arachidonic (C20:4 n-6) with an average of 52.74 mg/100 g meat and the linolenic acid (C18:3n-3) in an amount of 33.31 mg/100 g meat (Table 3).

For polyunsaturated fatty acids the highest average amount was observed for linoleic acid (343.15 mg/100 g meat), followed by arachidonic acid (52.74 mg/100 g meat) and by the linolenic acid (33.31 mg/100 g meat) (Table 3).

The coefficient of variation calculated for *Semimembranosus* muscles, recorded values below 10%, for a total of three polyunsaturates fatty acids other three showed a value below 15%, representing a relatively homogeneous population and for eleven fatty acids, the coefficient of variation exceeded the threshold of 20%, symbolizing a inhomogeneous population (Table 3).

Table 3. The average in fatty acids content (mg/100 g meat) for *Semimembranosus* muscles

Fatty acids		N.	$\bar{x} \pm S_{\bar{x}}$	S^2	V%	Min.	Max.
Saturated fatty acids	C14:0	42	44.69±5.88	44.68	45.56	15.92	66.55
	C15:0	42	8.84±0.80	7.64	31.28	4.62	11.56
	C16:0	42	499.65±54.11	31.09	37.51	227.81	713.33
	C17:0	42	11.02±0.69	5.66	21.59	7.02	13.09
	C18:0	42	120.94±8.75	98.58	25.06	74.80	150.65
Monounsaturated fatty acids	C16:1n-7	42	79.66±11.97	120.55	52.07	19.32	125.89
	C18:1n-7	42	27.90±2.57	79.04	31.86	14.78	36.74
	C18:1n-9	42	485.43±47.65	24.98	34.00	227.44	641.23
Polyunsaturated fatty acids	C18:2n-6	42	343.15±22.84	62.98	23.06	211.60	423.31
	C18:3n-3	42	33.31±2.92	11.97	30.32	16.39	42.93
	C20:2n-6	42	4.27±0.25	0.75	20.36	2.96	5.31
	C20:3n-6	42	4.30±0.08	0.08	6.55	3.88	4.79
	C20:4n-6	42	52.74±1.29	19.92	8.46	47.21	59.29
	C20:5n-3	42	10.70±0.39	1.84	12.67	8.58	12.36
	C22:4n-6	42	14.68±0.18	0.37	4.16	13.99	15.64
	C22:5n-3	42	7.88±0.32	1.20	13.92	6.58	9.50
	C22:6n-3	42	23.13±0.89	9.51	13.34	18.94	27.19

As regards the statistical significance of differences the content of fatty acids for *Semimembranosus* muscles, by gender (tab. 4) were observed significant differences for all saturated fatty acids: myristic (C14:0), pentadecanoic (C15:0), palmitic (C16:0), heptadecanoic (C17:0), stearic (C18:0) for the monounsaturated fatty acids (palmitoleic acid, vaccenic acid, oleic acid) and also for polyunsaturated acid C22:4 n-6 (docosatetraenoic acid).

Distinctly significant differences were found for polyunsaturated fatty acids C20:3n-6 (eicosatrienoic acid), C20:4n-6 (arachidonic acid) and C22:5n-3 (docosapentenoic acid). Insignificant differences were observed just for two polyunsaturated fatty acids: C20:5n-3 (eicosapentaenoic acid) also for C22:6n-3 (docosahexaenoic acid) (Table 4).

The average fatty acid content (mg/100 g meat) for *Triceps Brachiii* muscles has recorded the highest value for oleic acid (C18:1n-9) monounsaturated acid, with an average of 742.24 mg/100 g meat followed by saturated acid C16:0 (palmitic acid) with an amount of 699.59 mg/100 g meat and by the polyunsaturated acid C18: 2n-6 (linoleic acid) with an average of 576.55 mg/100 g meat (Table 5).

Table 4. The statistical significance of differences in fatty acids content for *Semimembranosus* muscles

Fatty acids		*Semimembranosus muscles*
Saturated fatty acids	C14:0	$\hat{F}$ =59.842; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C15:0	$\hat{F}$ =76.255; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C16:0	$\hat{F}$ =41.528; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C17:0	$\hat{F}$ =140.908; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C18:0	$\hat{F}$ =104.432; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
Monounsaturated fatty acids	C16:1	$\hat{F}$ =62.704; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C18:1n-7	$\hat{F}$ =105.68; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C18:1n-9	$\hat{F}$ =114.662; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
Polyunsaturated fatty acids	C18:2n-6	$\hat{F}$ =74.037; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C18:3n-3	$\hat{F}$ =72.203; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C20:2n-6	$\hat{F}$ =33.857; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C20:3n-6	$\hat{F}$ =7.302; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{5\%}< \hat{F} < F_{1\%}\Rightarrow$*
	C20:4n-6	$\hat{F}$ =7.216; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{5\%}< \hat{F} < F_{1\%}\Rightarrow$*
	C20:5n-3	$\hat{F}$ =0.833; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%}\Rightarrow$n.s
	C22:4n-6	$\hat{F}$ =57.997; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C22:5n-3	$\hat{F}$ =7.569; $F_{5\%}(1;40)$=3.963; $F_{1\%}$=6.971; $F_{5\%}< \hat{F} < F_{1\%}\Rightarrow$*
	C22:6n-3	$\hat{F}$ =2.978; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%}\Rightarrow$n.s

Relatively large amounts were recorded also for monounsaturated fatty acid C16: 1n-7 (palmitoleic acid), 124.35 mg/100 g meat, followed by C18: 3n-3 (linolenic acid), with an average of 58.94 mg/100 g meat, by C20:4n-6 (arachidonic acid), with an amount of 52.28 mg/100 g meat, C18:1n-7 (vaccenic acid) with an amount of 46.45 mg/100 g meat and C22: 6n-3 (docosahexaenoic acid), with 22.26 mg/100 g meat (Table 5).

Table 5. The average in fatty acids content (mg/100 g meat) for *Triceps Brachii* muscles

Fatty acids		N.	$\bar{x} \pm S_{\bar{x}}$	S^2	V%	Min.	Max.
Saturated fatty acids	C14:0	42	65.71±10.69	11.50	56.36	16.14	106.56
	C15:0	42	14.12±1.61	31.01	39.45	6.61	19.76
	C16:0	42	699.59±80.39	71.59	39.81	326.24	985.84
	C17:0	42	17.54±1.24	18.55	24.55	11.72	21.10
	C18:0	42	176.68±17.98	37.83	35.25	92.76	240.06
Monounsaturated fatty acids	C16:1n-7	42	124.35±21.91	58.83	61.03	21.17	204.00
	C18:1n-7	42	46.45±5.33	341.03	39.75	21.06	63.51
	C18:1n-9	42	742.24±91.76	18.90	42.82	312.05	1057.44
Polyunsaturated fatty acids	C18:2n-6	42	576.55±45.78	29.46	27.51	364.70	734.11
	C18:3n-3	42	58.94±5.55	39.58	32.62	33.13	77.81
	C20:2n-6	42	7.67±0.50	3.06	22.80	5.29	9.37
	C20:3n-6	42	4.32±0.16	0.32	13.13	3.45	5.12
	C20:4n-6	42	52.28±1.57	29.54	10.40	47.59	60.59
	C20:5n-3	42	10.33±0.83	8.21	27.73	6.15	13.78
	C22:4n-6	42	14.77±0.18	0.37	4.13	13.90	15.39
	C22:5n-3	42	6.87±0.30	1.11	15.35	5.65	8.47
	C22:6n-3	42	22.26±0.85	8.68	13.23	18.45	26.56

The coefficient of variation calculated for *Triceps brachii* muscles has recorded values that exceed the threshold of 20% (for a total of twelve of seventeen fatty acids included in the study) symbolizing a majority inhomogeneous population (Table 5).

Table 6. The statistical significance of differences in fatty acids content for *Triceps Brachii* muscles

Fatty acids		*Triceps Brachii*
Saturated fatty acids	C14:0	$\hat{F}$ =50.59; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C15:0	$\hat{F}$ =107.53; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C16:0	$\hat{F}$ =96.815; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C17:0	$\hat{F}$ =118.99; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C18:0	$\hat{F}$ =103.175; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
Monounsaturated fatty acids	C16:1n-7	$\hat{F}$ =94.840; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C18:1n-7	$\hat{F}$ =215.01; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C18:1n-9	$\hat{F}$ =122.939; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
Polyunsaturated fatty acids	C18:2n-6	$\hat{F}$ =134.866; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694 $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C18:3n-3	$\hat{F}$ =144.185; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C20:2n-6	$\hat{F}$ =139.981; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%}<F_{0.1\%}\Rightarrow$***
	C20:3n-6	$\hat{F}$ =0.035; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%}\Rightarrow$n.s
	C20:4n-6	$\hat{F}$ =1.704; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%}\Rightarrow$n.s
	C20:5n-3	$\hat{F}$ =0.073; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%}\Rightarrow$n.s
	C22:4n-6	$\hat{F}$ =12.222; $F_{5\%}(1;40)$= 3.963; $F_{1\%}$=6.971; $F_{0.1\%}$=11.694; $F_{5\%}< \hat{F} <F_{1\%} <F_{0.1\%}\Rightarrow$**
	C22:5n-3	$\hat{F}$ =0.036; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%}\Rightarrow$n.s
	C22:6n-3	$\hat{F}$ =0.010; $F_{5\%}(1;40)$= 3.963; $\hat{F} < F_{5\%}\Rightarrow$n.s

Following statistical significance of differences evaluation regarding fatty acid composition of *Triceps Brachial* muscles, were observed very significant differences for all saturated fatty acids, monounsaturated acids also for other three polyunsaturated fatty acids C18: 2n-6 (linoleic acid), C18: 3n-3 (linolenic acid) and C20: 2n-6 (eicosadienoic acid). Distinctly significant differences have been observed for the C22: 4 n-6 (docosatetraenoic acid). Insignificant differences were noted for C20:3n-6, C20:4 n-6, C20:5n-3, C22:5n-3, C22:6n-3 (Table 6).

4. Conclusions

Nutritional value of meat is influenced by its fatty acid content, especially at monoynsaturated and polyunsaturated fatty acid. For Flemish Giant rabbit meat the content in this fatty acid are relatively higher, therefore, given the evaluations presented in the current study, we recommend the consumption of this meat.

The average fatty acid content (mg/100 g meat) for *Triceps Brachii* muscles has recorded the highest value (from all muscle groups analysed) for oleic acid (C18:1n-9) monounsaturated acid, with an average of 742.24 mg/100 g, followed by polyunsaturated acid C18: 2n-6 (linoleic acid) with an average of 576.55 mg/100 g meat. They had and the higher amount of saturated fatty acid, C16:0 (palmitic acid, 699.59 mg/100 g meat). For *Semimembranosus* muscles the highest value was highlighted for oleic acid, with 485.43 mg/100 g meat, followed by linoleic acid (C18:2n-6) with 343.15 mg/100 g meat. For *Longissimus dorsi* muscles significant average amount was found also to oleic acid, (C18:1n-9), with 308.66 mg/100 g meat and for linoleic acid (C18-2n-6), 231.96 mg/100 g meat, but the highest average value for saturated fatty acids was recorded for palmitic acid, 345.05 mg/100 g meat, less than 50% than in the *Triceps brachii* muscles.

Therefore *Longissimus dorsi* muscle is the most lean, healthy and dietetically source of polyunsaturated and monounsaturated fatty acids.

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