# Fatty acid concentration in the meat of young female nutria *(Myocastor coypus* Mol.*)*

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**Fatty acid profile was studied in shoulder, loin and thigh muscles from 10 young female nutria reared in an extensive production system. The main component of the diet was fresh green forage. Selected fatty acid ratios were compared for studied muscles. The muscles from the thigh showed the most favored properties for consumption in terms of fatty acid concentrations. The forage diets offered to nutrias resulted in low values of n-6/n-3 PUFA ratio. The highest capacity of Δ9-desturation was noted for thigh and the lowest for shoulder muscles. That trend was consistent for the most of fatty acid indexes assigned in the study. The detectable concentrations of CLA in all parts of the carcass suggested the substantial importance of microbial lipid metabolism for the health promoting properties of nutrias muscles.**

**KEY WORDS: nutria / muscle / fatty acids**

The growing demand for meats of high nutritional value creates different strategies leading to improve meat quality of farmed animals. Dietary modifications are considered to be most effective in this respect [24]. The fatty acid (FA) content of the intramuscular fat has been shown to be of great importance for the positive impact of meat consumption for human long-term health [13]. Some of FA, like conjugated linoleic acid (CLA) have gathered special attention of researchers due to their health promoting properties [16]. Unexpectedly, *c9t*11 C 18:2 isomer was found in fat depots of monogastric beavers in large amounts, comparable with ruminants [7]. This trend has clearly a metabolic origin [6]. In rabbits, other herbivorous mammals, re-ingestion of fermentation products of the caecum is an important factor of the fatty acid profile in muscles and fat [10, 15].

Odd-numbered (ONFA) and branched fatty acids (BFA) content in milk and intramuscular fat of mammals is commonly attributed to the absorption of microbially synthesized FA in the small intestine [10, 11, 15, 22]. In the intramuscular fat tissue of nutrias (reported as practicing caecotrophy by Takahaschi and Sakaguchi [19]), FA of microbial origin were also detected [7]. *Trans*-vaccenic acid (*t*11 C18:1, TVA), an important intermediate precursor of CLA [8, 9, 18], was previously found in detectable amounts in various rabbit tissues as well as in the intramuscular fat of nutrias [5, 10]. However it should be noted that, according to epidemiological evidence, consuming small amounts of *trans* fatty acids (TFA) from natural sources does not contribute importantly to increased risk of coronary heart disease in humans [23].

Green forage diets have beneficial effects on meat quality of farmed animals. The proportions of *n-6/n-3* polyunsaturated fatty acids (PUFA) in the meat of grazing cattle, sheep or rabbits show more favored value, than those in concentrate fed livestock [3]. High content of *n-3* PUFA in human diets has been shown to decrease morbidity and mortality from cardiovascular disease (CVD) by the protection from atherothrombosis [12].

The aim of this study was to compare the concentration of fatty acids and their indices in three muscles of 8-months old nutria females, fed exclusively farm-produced fodder with high amounts of fresh green forages.

## Material and methods

The experiment was carried out on 10 nutria females (±8-months-old) randomly chosen from the population on the farm (in eastern Poland). The animals were kept together in the indoor pen without water pool. Their diet based exclusively on farm-produced green forages and potatoes. The forages were harvested alternatively from the meadow or clover field. Nutrias were fed twice per day, that is, in the morning and in the evening. In the morning nutria were fed *ad libitum* with steamed potatoes, whereas in the evening fresh clover or a grass mixture was also provided *ad libitum*. Drinking water was constantly supplied.

Animals were stunned using a strong electrical impulse (230 V) and bled. The slaughter, pelting and evisceration (dressing) processes were performed in an abattoir on the farm, according to the norms applied to rabbits [1]. The muscle tissue samples represented fore (shoulder – S), intermediate (loin – L) and hind (thigh – T) parts of the carcasses. To assess this, the following muscles: *triceps brachii, longissimus lumborum* and *biceps femoris* were excised from the left side of carcasses, deliberately ground, frozen in –18ºC and stored until analysis in hermetically sealed polyethylene bags.

The method used of FAME preparation and analysis by gas chromatography was described by Głogowski et al. [5].

Statistical analyses of the fatty acid concentrations in three muscles of nutrias were conducted using the nonparametric Mann-Whitney U test for comparing independent groups. Statistica software ver. 9 was used (StatSoft, USA). Results are presented as means ± standard deviation. Differences were considered significant at $P<0.05$, while at $P<0.1$ differences were indicated as tendencies.

**Table 1 − Tabela 1**
Fatty acid composition of diets
Zawartość kwasów tłuszczowych w paszach

| Main fatty acids<br>Ważniejsze kwasy tłuszczowe<br>(mg/kg) | Diet − Pasza | | |
|---|---|---|---|
| | potatoes<br>ziemniaki | clover<br>koniczyna | grass mixture<br>zielonka łąkowa |
| ∑SFA | 51.8 | 456.1 | 663.4 |
| C 12:0 | nd | 1.1 | 3.8 |
| C 14:0 | nd | 2.8 | 9.2 |
| C 16:0 | 39.8 | 394.0 | 592.0 |
| C 18:0 | 11.9 | 30.1 | 34.2 |
| ∑MUFA | nd | 56.6 | 203.7 |
| *c*9 C 16:1 | nd | 19.7 | 56.2 |
| *c*11 C 16:1 | nd | 0.1 | nd |
| *c*9 C 18:1 | nd | 14.6 | 54.5 |
| ∑PUFA | 25.3 | 1197.0 | 3302.0 |
| *c*9*c*12 C 18:2 | 25.3 | 308.6 | 779.0 |
| *c*9*c*12*c*15 C 18:3 | nd | 856.5 | 2482.0 |
| ΣFA | 77.6 | 1710.0 | 4169.0 |
| *n-6/n-3* | − | 0.36 | 0.31 |

nd − not detected – nie wykryto

## Results and disscussion

The highest amount of stearic acid (C 18:0) was deposited in S muscle what substantially affected the value of T-SFA index for shoulder, significantly different than that in thigh (*P*=0.004, Table 3). Interestingly, the *trans* products of C 18:0 desaturation seemed to be preferentially deposited in loin muscle, showing the pattern consistent with results reported for rabbits [15]. On the other hand, the content of all *cis* isoforms of C 18:1, as well as other MUFA concentrations were higher in thigh or shoulder muscles. Further studies are needed to clarify that tendency.

T muscle showed slightly higher concentration of linoleic (LA) and linolenic (ALA) acids in comparison with shoulder and loin, whereas the concentration of arachidonic acid (AA) was higher in S muscle and consistent with the capacity of Δ4-desaturation herein. Thus, the results suggest that the *n-6* PUFA are preferentially metabolized and accumulated in the fore part muscles of female nutria carcass. It should also be noted that the higher concentration of LA in thigh muscle than that in shoulder or loin was consistent with most of indices of desaturase capacity studied, except for Δ4.

One of the most interesting results of this study was the presence of rumenic acid (*c*9*t*11 C 18:2 CLA) in all three muscles studied. It seems reasonable to assume that CLA, *trans*-C 18:1 and ONFA concentrations found in tissues are of caecotroph origin [10].

Unexpectedly, the S muscle has shown more *c*7*c*10*c*13*c*16*c*19 C 22:5 (DPA) and *c*4*c*7*c*10*c*13*c*16*c*19 C 22:6 (DHA) than T or L muscles (Table 2). One plausible explanation could be that FA metabolism, including β-oxidation, is more efficient in shoulder than that in thigh or loin muscles.

**Table 2 − Tabela 2**
Individual fatty acid concentrations in three muscles of nutria females (mg/100 g of fresh tissue)
Stężenie poszczególnych izomerów w trzech mięśniach samic nutrii (mg/100 g świeżej tkanki)

| Fatty acids<br>Kwasy tłuszczowe | S | | T | | L | | *P* | | |
|---|---|---|---|---|---|---|---|---|---|
| | x | Sd | x | Sd | x | Sd | S/T | S/L | T/L |
| C 10:0 | 1.98 | 1.87 | 1.58 | 0.94 | 2.32 | 1.01 | 0.87 | 0.81 | 0.93 |
| C 12:0 | 9.06 | 5.65 | 11.04 | 6,66 | 9.25 | 7.81 | 0.65 | 0.65 | 0.44 |
| C 14:0 | 461.25 | 273.97 | 552.75 | 323.11 | 424.13 | 352.39 | 0.59 | 0.44 | 0.44 |
| C 15:0 | 43.62 | 16.25 | 46.62 | 29.40 | 35.45 | 32.06 | 0.40 | 0.76 | 0.25 |
| C 16:0 | 3749.15 | 1930.38 | 3803.51 | 1900.08 | 3208.19 | 2154.08 | 0.87 | 0.40 | 0.40 |
| C 17:0 | 35.07 | 21.48 | 40.14 | 21.46 | 33.11 | 23.86 | 0.87 | 0.44 | 0.36 |
| C 18:0 | 726.69 | 294.74 | 612.46 | 257.76 | 536.78 | 266.15 | 0.25 | 0.13 | 0.49 |
| C 20:0 | 2.08 | 1.36 | 2.25 | 0.53 | 2.67 | 1.04 | 0.75 | 0.71 | 0.81 |
| C 21:0 | 6.33 | 6.99 | 2.30 | 0.99 | 1.39 | 0.98 | 0.75 | 0.05 | 0.11 |
| C 24:0 | 8.44 | 3.37 | 7.65 | 2.37 | 6.64 | 2.40 | 0.59 | 0.49 | 0.54 |
| *c*7 C 14:1 | 3.65 | 1.62 | 3.90 | 2.05 | 5.47 | 3.21 | 0.11 | 0.50 | 0.53 |
| *c*9 C 14:1 | 27.44 | 23.09 | 51.62 | 41.86 | 33.91 | 38.81 | 0.13 | ns | 0.13 |
| *c*7 C 15:1 | 28.86 | 6.18 | 24.15 | 6.72 | 11.23 | 3.29 | 0.11 | 0.0001 | 0.0001 |
| *c*10 C 15:1 | 10.53 | 7.78 | 16.87 | 11.57 | 13.72 | 11.93 | 0.32 | 0.76 | 0.32 |
| *c*7 C 16:1 | 56.04 | 49.45 | 79.28 | 51.27 | 56.30 | 52.21 | 0.09 | 0.65 | 0.13 |
| *c*9 C 16:1 | 2073.99 | 1283.54 | 2886.60 | 1824.05 | 2122.28 | 1693.40 | 0.36 | 0.82 | 0.25 |
| *c*6 C 17:1 | 15.19 | 3.24 | 12.76 | 2.77 | 6.20 | 2.12 | 0.08 | 0.0002 | 0.0003 |
| *c*9 C 17:1 | 35.87 | 31.69 | 60.06 | 45.17 | 40.64 | 42.42 | 0.28 | 0.82 | 0.22 |
| *c*10 C 17:1 | 12.14 | 5.68 | 13.29 | 6.59 | 8.76 | 5.42 | 0.93 | 0.15 | 0.04 |
| *t*9 C 18:1 | 2.53 | 0.90 | 1.89 | 1.80 | 3.32 | 1.79 | 0.40 | 0.57 | 0.87 |
| *t*11 C 18:1 | 3.94 | 1.99 | 2.85 | 1.99 | 4.02 | 2.42 | 0.25 | 0.93 | 0.36 |
| *c*9 C 18:1 | 2669.88 | 1617.28 | 3492.52 | 1966.38 | 2908.16 | 2226.24 | 0.22 | 0.82 | 0.22 |
| *c*11 C 18:1 | 426.52 | 242.01 | 531.49 | 305.54 | 412.03 | 291.98 | 0.36 | 0.70 | 0.15 |
| *c*12 C 18:1 | 1.47 | 1.01 | 1.23 | 0.67 | 1.34 | 0.58 | 0.15 | 0.74 | 0.24 |
| *c*14 C 18:1 | 2.27 | 2.28 | 3.51 | 1.63 | 2.58 | 1.00 | 0.51 | 0.93 | 0.39 |
| *c*11 C 20:1 | 5.23 | 5.51 | 6.17 | 4.52 | 5.28 | 4.64 | 0.22 | 0.81 | 0.12 |
| *c*15 C 24:1 | 3.76 | 1.38 | 3.98 | 1.41 | 3.37 | 1.29 | 0.87 | 0.17 | 0.15 |
| *c*9*c*12 C 16:2 | 8.74 | 7.13 | 13.14 | 10.43 | 9.66 | 8.70 | 0.36 | 0.85 | 0.28 |
| *c*9*c*12 C 18:2 (LA) | 1571.77 | 636.98 | 1707.84 | 928.38 | 1410.14 | 776.07 | 0.76 | 0.44 | 0.25 |
| *c*9*c*12*c*15 C 18:3 (ALA) | 345.93 | 244.67 | 492.15 | 313.66 | 337.89 | 284.07 | 0.36 | 0.93 | 0.22 |
| *c*9*t*11 C 18:2 | 1.13 | 0.57 | 1.49 | 1.25 | 1.74 | 0.89 | 0.37 | 0.24 | 0.77 |
| *c*11*c*14 C 20:2 | 2.75 | 1.62 | 1.49 | 1.16 | nd | − | 0.14 | − | − |
| *c*8*c*11*c*14 C 20:3 *n-6* | 2.63 | 1.23 | 1.71 | 0.91 | 0.65 | 0.20 | 0.64 | 0.03 | 0.001 |
| *c*11*c*14*c*17 C 20:3 *n-3* | 1.54 | 1.47 | 1.12 | 0.67 | nd | − | 0.22 | − | − |
| *c*5*c*8*c*11*c*14 C 20:4 (AA) | 213.72 | 45.99 | 183.32 | 39.77 | 140.84 | 25.12 | 0.36 | 0.85 | 0.28 |
| *c*5*c*8*c*11*c*14*c*17 C 20:5 | 3.43 | 1.55 | 3.30 | 2.28 | 1.95 | 0.40 | 0.65 | 0.03 | 0.01 |
| *c*7*c*10*c*13*c*16*c*19 C 22:5 | 78.99 | 12.35 | 72.75 | 16.83 | 57.95 | 12.25 | 0.54 | 0.005 | 0.05 |
| *c*4*c*7*c*10*c*13*c*16*c*19 C 22:6 | 41.05 | 9.13 | 35.56 | 10.81 | 26.27 | 7.09 | 0.17 | 0.001 | 0.05 |

x − mean value − wartość średnia; Sd − standard deviation − odchylenie standardowe; S − shoulder muscle – mięśnie łopatki; T – thigh muscle – mięśnie udowe;L – loin muscle – mięśnie combra; LA – linoleic acid – kwas linolowy; ALA – linolenic acid – kwas linolenowy; AA – arachidonic acid – kwas arachidonowy; nd - not detected – nie wykryto; ns – not significant - nieistotne

**Table 3 − Tabela 3**
Fatty acid ratios in three muscles of nutria females
Indeksy kwasów tłuszczowych w trzech mięśniach samic nutrii

| Specification<br>Wyszczególnienie | S | | T | | L | | *P* | | |
|---|---|---|---|---|---|---|---|---|---|
| | x | Sd | x | Sd | x | Sd | S/T | S/L | T/L |
| ΣFA | 12657.14 | 6604.60 | 14781.39 | 8000.53 | 11868.29 | 8258.50 | 0.49 | 0.54 | 0.32 |
| ΣSFA | 5029.31 | 2538.25 | 5078.50 | 2527.62 | 4257.09 | 2831.57 | ns | 0.40 | 0.40 |
| ΣMUFA | 5360.13 | 3239.44 | 7190.19 | 4213.64 | 5627.14 | 4359.92 | 0.32 | 0.82 | 0.19 |
| ΣPUFA | 2267.69 | 903.78 | 2512.69 | 1301.93 | 1984.06 | 1082.82 | 0.76 | 0.28 | 0.22 |
| ONFA | 72.06 | 41.70 | 88.44 | 51.91 | 59.11 | 41.12 | 0.52 | 0.52 | 0.14 |
| *trans*-C 18:1 | 4.69 | 3.80 | 4.75 | 3.63 | 7.35 | 4.11 | ns | 0.35 | 0.17 |
| *n-3* PUFA | 468.72 | 250.52 | 603.78 | 338.57 | 423.09 | 293.03 | 0.44 | 0.59 | 0.17 |
| *n-6* PUFA | 1789.82 | 657.04 | 1894.21 | 962.70 | 1551.38 | 785.70 | 0.90 | 0.30 | 0.24 |
| *n-6/n-3* | 4.21 | 0.95 | 3.21 | 1.09 | 4.27 | 1.10 | 0.06 | 0.85 | 0.08 |
| MUFA/SFA | 1.01 | 0.18 | 1.34 | 0.18 | 1.20 | 0.26 | 0.001 | 0.10 | 0.30 |
| PUFA/SFA | 0.50 | 0.13 | 0.47 | 0.11 | 0.50 | 0.07 | 0.47 | 0.52 | 0.96 |
| UFA/SFA | 1.51 | 0.16 | 1.82 | 0.24 | 1.70 | 0.22 | 0.007 | 0.03 | 0.24 |
| A-SFA | 0.72 | 0.10 | 0.64 | 0.06 | 0.65 | 0.06 | 0.08 | 0.14 | 0.47 |
| T-SFA | 1.40 | 0.14 | 1.16 | 0.17 | 1.23 | 0.17 | 0.004 | 0.02 | 0.38 |
| Δ4-desaturase | 0.34 | 0.03 | 0.32 | 0.02 | 0.30 | 0.03 | 0.22 | 0.02 | 0.06 |
| Δ5-desaturase | 0.98 | 0.002 | 0.99 | 0.004 | 0.95 | 0.072 | 0.49 | 0.03 | 0.001 |
| Δ6-desaturase with elongase | 0.0017 | 0.00071 | 0.0033 | 0.0075 | 0.0004 | 0.0002 | 0.01 | ns | ns |
| Δ9-desaturase$^{C14:1/C14:0}$ | 0.04 | 0.01 | 0.07 | 0.02 | 0.06 | 0.02 | 0.009 | 0.42 | 0.14 |
| Δ9-desaturase | 0.47 | 0.05 | 0.54 | 0.03 | 0.51 | 0.06 | 0.001 | 0.09 | 0.08 |

x − mean value − wartość średnia; Sd − standard deviation − odchylenie standardowe; S − shoulder muscle; T – thigh muscle; L – loin muscle; ONFA − the sum of C 15:0, C 17:0 and C 21:0; *trans*-C 18:1 − the sum of *t9* C 18:1 and *t*11 C 18:1; A-SFA − (C 12:0 + 4 x C 14:0 + C 16:0)/(∑MUFA + ∑*n-6* + ∑*n-3*); T-SFA − (C 14:0 + C 16:0 + C 18:0)/0.5 x ∑MUFA + 0,5 x ∑*n-6* + 3 x ∑*n-3* + ∑*n-3*/∑*n-6*) [21]; Δ4-desaturase − *c*4*c*7*c*10*c*13*c*16*c*19 C 22:6/ (*c*4*c*7*c*10*c*13*c*16*c*19 C 22:6 + *c*7*c*10*c*13*c*16*c*19 C 22:5); Δ5-desaturase − *c*5*c*8*c*11*c*14 C 20:4/(*c*8*c*11*c*14 C 20:3 + *c*5*c*8*c*11*c*14 C 20:4); Δ6-desaturase with elongase − *c*9*c*12 C 18:2/ (*c*9*c*12 C 18:2 + *c*11*c*14*c*17 C 20:3 *n-3*); Δ9-desaturase$^{C14:1/C14:0}$ − *c*9 C 14:1/(C 14:0 + *c*9 C 14:1); Δ9-desaturase − *c*9 C 14:1 + *c*9 C 16:1 + *c*9 C 17:1 + *c*9 C 18:1)/(C 14:0 + *c*9 C 14:1 + C 16:0 + *c*9 C 16:1 + C 17:0 + *c*9 C 17:1 + C 18:0 + *c*9 C 18:1); ns – not significant – nieistotne

ALA content in forage feeds was about 3-fold higher than that of LA (Table 1). Both are essential FA and primary substrates for biosynthesis pathways of long chain *n-6* and *n-3* PUFA. They compete for Δ6-desaturase, which has more affinity for ALA than LA. Therefore, the tissue content of long chain FA resulting from Δ6-desaturase activity relies not only on substrate availability but also on the LA/ALA ratio [20], which favored *n-3* PUFA family in the present study.

The analysis showed the similar concentration of total FA (ΣFA) in muscles from three regions of nutrias' carcasses (Table 3). The sum of MUFA (ΣMUFA) concentrations was numerically higher in the thigh (T), than that in the loin (L) muscles. The same tendency was shown for the concentration of odd-numbered FA (ONFA), *trans*-C 18:1 isomers and *n-3* PUFA. As reported before [4], the content of crude fat (CF) is higher in thigh muscles of nutrias than in the loin, what is consistent with the conclusion that muscle fatness has an effect on the FA profile [15].

The value of the *n-6/n-3* PUFA ratio (*n-6/n-3*) in T muscle of nutria females was lower in comparison with those in S and L muscles (Table 3). From the consumer's point of view, the *n-6/n-3* values between 3 and 4 are considerably more favorable than that in female nutrias from an intensive production system (*i.e*. 4.2 *versus* 16.7) [17], but slightly higher than that reported previously for older nutria females [5]. Thus, the effect of the age of animals on the proportion of *n-3* and *n-6* PUFA families in nutria muscles needs further explanation.

The concentration ratios of MUFA/SFA and UFA/SFA in T muscle were significantly higher than in S muscle, as well as the difference between UFA/SFA ratio in S and L muscles The differences in PUFA/SFA ratio values between muscles studied were negligible (Table 3).

The highest total concentration of MUFA was detected in T muscle, the lowest in S muscle. Consistently, this proportion is related to the capacity of Δ9-desaturation in respective muscles. As can be seen from the data in Table 3, the Δ9-desaturase index$^{C14:1/C14:0}$ (determined from *cis* 9 C 14:1 and C 14:0) is significantly higher ($P$=0.009) in T muscle in comparison with S muscle. Similarly, the Δ9-desaturase index determined from *cis* 9 C 14:1, *cis* 9 C 16:1, *cis* 9 C 17:1, *cis* 9 C 18:1, C 14:0, C 16:0, C 17:0 and C 18:0 confirmed that finding ($P$=0.001). Considering the above, the Δ9-desaturation appears more efficient in thigh than that in shoulder muscle.

The Δ4-desaturation of long chain FA detected in our study appeared to be not as efficient as that in older nutrias [5], and differed significantly for S and L muscles ($P$=0.02). The intensity of Δ5-desaturation, leading to AA was the lowest in loin and differed significantly from that in shoulder and especially in thigh muscles ($P$=0.03 and $P$=0.001 respectively, Table 3), which is consistent with the data reported for rabbits [15]. This tendency for increased AA formation might have substantially elevated the *n-6/n-3* ratio, especially in S and L muscles.

Relatively high values for the atherogenic (A-SFA) and especially thrombogenic (T--SFA) indices recorded in our study were the likely consequence of ΣSFA concentration in nutrias muscles with special emphasis on C 18:0. However, the contribution of microbial metabolism of dietary LA cannot be dismissed [2, 14]. The lowest (favored) values of A--SFA and T-SFA were calculated for thigh muscle, with significant differences of T-SFA with shoulder (Table 3). This finding is consistent with the results of Δ9-desaturase activity and *n-6/n-3* ratio, suggesting that the hind part of nutria carcass is the most valuable for consumers.

In conclusion, we would like to emphasize that all main parts of nutria carcass are consumable, but they have different characteristics in terms of their biochemical profile namely, the profile of FA. The extensive feeding system of nutrias, including the offering of large amounts of fresh forages has shown to have a substantially beneficial effects on the quality parameters of the carcass. The values of some FA ratios (e.g. the important *n-6/n-3* proportion) were somewhat different than that in older animals. Thus, it seems likely that age of the animal has an effect on fatty acid metabolism and deposition in different muscles of nutria carcass, but its importance remains unclear. The presence of detectable amounts of CLA isomer (rumenic acid), and its precursor − TVA along with particular isomers of *trans*-C 18:1 and ONFA leads to the possible conclusion that the microbial metabolism of FA in caecum has an important contribution to health-promoting, nutritional properties of nutria meat.

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## Stężenie kwasów tłuszczowych w mięsie młodych samic nutrii (*Myocastor coypus* Mol.)

S t r e s z c z e n i e

Określono profil kwasów tłuszczowych dla mięśni łopatki, combra i uda 10 młodych nutrii utrzymywanych w systemie ekstensywnym. Główny element diety stanowiły świeże zielonki. Porównano wartości wybranych indeksów kwasów tłuszczowych dla wszystkich badanych mięśni. Dla mięśni udowych przydatność do spożycia ze względu na koncentrację poszczególnych izomerów była najwyższa (tab. 2). Efektem diety bogatej w zielonki były niskie wartości indeksu proporcji *n-6/n-3* wielonienasyconych kwasów tłuszczowych (3,21; 4,21 i 4,24, odpowiednio dla mięśni udowych, łopatki i combra − tab. 3). Największe rozmiary desaturacji Δ9 zanotowano w mięśniach udowych (0,54), najniższe w obrębie łopatki (0,47) (tab. 3). Dla większości analizowanych indeksów kwasów tłuszczowych wykazano podobną tendencję. Mierzalne stężenie CLA (tab. 2), stwierdzone w każdej z badanych części tuszy, sugeruje istotne znaczenie metabolicznych procesów bakteryjnego trawienia lipidów, zachodzących w jelicie ślepym, dla możliwości kształtowania prozdrowotnych właściwości mięsa nutrii.