Can long chain \(n\)-3 fatty acids from feed be converted into very long chain \(n\)-3 fatty acids in fillets from farmed rainbow trout (\textit{Oncorhynchus mykiss})?

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Abstract. The link between the basic chemical and fatty acid composition of trout feed on one hand and trout (\textit{Oncorhynchus mykiss}) meat (fillet) was investigated. The content of 52 fatty acids from feed and trout meat lipids was determined by \textit{in-situ} transesterification and capillary column gas-liquid chromatography. On average, 100 g of trout feed contained 7.4 g of moisture, 47.7 g of proteins, 6.09 g of ash, 21.4 g of fat, and as for fatty acid composition, 47.8 wt. \% were monounsaturated, 34.0 wt. \% were polyunsaturated and 18.1 wt. \% were saturated fatty acids, with the PS ratio 1.88, \(n\)-6/\(n\)-3 ratio 1.74, 0.80 wt. \% of \textit{trans} and 3.28 wt. \% of very long chain \(n\)-3 fatty acids. On average, 100 g of trout meat contained 76.1 g of moisture, 21.4 g of proteins, 1.34 g of ash, 2.52 g of fat, and in the fatty acid composition 42.1 wt. \% were monounsaturated, 38.2 wt. \% were polyunsaturated and 18.9 wt. \% were saturated fatty acids, with the PS ratio 2.02, \(n\)-6/\(n\)-3 ratio 0.98, 0.95 wt. \% of \textit{trans} and 13.25 wt. \% of very long chain \(n\)-3 fatty acids.

1. Introduction
Fish farming has been developed into a highly productive and efficient industry for the production of animal protein for human consumption. However, in the modern way of life, care for human health is very important. It is accepted that fish consumption has nutritional and health benefits in humans [1,2]. Fish meat is considered to be a good source of proteins of high biological value, polyunsaturated \(n\)-3 fatty acids (\(n\)-3 PUFA), minerals and vitamins. Preventive effects of \(n\)-3 PUFA on atherosclerosis, thrombosis or hypertension have been reported in numerous studies [3,4]. Additionally, it has been suggested that \(n\)-3 PUFA may have a favorable influence on diseases, such as asthma, stroke, cancer or diabetes [5].

Besides the fat content, their fatty acid (FA) composition, and above all the proportion and ratio of \(n\)-3 to \(n\)-6 FAs, as well as between saturated and unsaturated FA, the most important fish quality parameters are microbiological safety, color, texture and content of essential minerals; all of them contribute to high nutritional value of fish meat and their positive nutritional effects [6]. However, the composition of fish meat is highly variable; some factors of variability are the age, size or part of the fish [7], the sex, the season of the year [8], the quality of water [9], the diet [10,11] and the feeding system [10,12].

Research found that the histological changes observed suggest an effect of dietary lipid sources on the transport and metabolism of fat in the fish, but further studies are required to clarify this [10].
Consequently, the aim of this preliminary study was to investigate the FAs and basic chemical composition of trout feed on one hand and farmed trout meat on the other, suggest a possible link between FA profiles of feed and meat, as well to obtain some information about nutrient content in the muscle of fillets from farmed trout in Slovenia.

2. Materials and methods

Freshwater-reared rainbow trout (n = 10) were randomly selected from stocks of ready-for-sale animals obtained from Slovenian commercial farms, producing for the domestic market. At the same time, feed, with which fish were farmed, was collected. The sampling was carried out between March and April, 2017.

Fish were slaughtered in water and ice, packed in polystyrene boxes, and covered with ice. Boxes with fish were immediately transported to the laboratory where fish were weighed and processed. The peritoneal cavity was opened along a ventral midline incision; the entire visceral mass was discarded. An incision along the dorsal fin up to the caudal fin, and another incision behind the opercula, excluding lateral and ventral fins, were made to separate both fillets from each carcass. Each fillet was cut along the insertion line of the ribs to obtain a dorsal and a ventral fillet (figure 1). After skinning, separately the two dorsal and two ventral fillets from each fish were joined. On the dorsal fillets, FA composition and on the ventral fillets, basic chemical composition was analyzed. Ten representative fish (dorsal and ventral fillets) and ten associated fish feed samples were prepared for analysis in accordance with ISO standard method [13]. The samples were homogenized by using a homogenizer Grindomix GM 200 (Retch, Germany) at 5000-6000 rpm for 20 s and stored vacuum packed in plastic bags at -18 °C until further analysis.

![Figure 1. Insertion line of ribs rainbow trout [7].](image)

2.1 Chemical composition

The moisture content of feed and fillet was determined on 5 g of previously homogenized samples dried in an oven at 105 °C (according to Association of Official Analytical Chemists (AOAC) 950.46) [14]. The total protein content (crude protein, N × 6.25) was determined by using the Kjeldahl method (according to AOAC 928.08) [15], and the ash content was determined by mineralization of the samples at 550 °C (according to AOAC 920.153) [16]. The fat content in feed and fillet was determined by the method described as AOAC Official Method 991.36 Fat (crude) in Meat and Meat Products [17]. Lipids were extracted with petroleum ether (boiling point ranged from 40 to 60 °C) after hydrolysis of the sample with hydrochloric acid. Data from the basic chemical analyses were expressed on a wet matter basis.

2.2 Fatty acid analysis

The FA composition of feed and fillet was determined by gas chromatography, where in situ transesterification [18] was used, modified by Polak et al. [19]. The FAMEs were determined by capillary gas chromatography on GC Agilent Technologies 6890 with a flame ionization detector and HP-88 capillary column (100 m × 0.25 mm × 0.20μm, Agilent Technologies). Separation and detection were performed under the following temperature conditions: 150° C, hold 10 min, rate 1.5 °C min⁻¹ to 180° C, hold 40 min, 3° C min⁻¹ to final temperature of 240° C. Total analysis time was 95 min. The injector and detector temperatures were 250° C and 280° C, respectively. The carrier gas was helium at a flow rate of 2.3 mL min⁻¹. Injected volume was 1 μL and injector split ratio was 1:30.
Nitrogen was used as the make-up gas at a flow rate of 45 mL min\(^{-1}\); detector gases were hydrogen and synthetic air (21% O\(_2\)) at a rate of 40 mL min\(^{-1}\) and 450 mL min\(^{-1}\), respectively.

The FAMEs were determined through their retention times in comparison to the relevant standard mixtures using: 37 Components FAME mix (Supelco, Bellefonte, USA); PUFA No. 1-animal source (Supelco, Bellefonte, USA); linoleic acid methyl ester cis/trans isomer Mix (Supelco, Bellefonte, USA) and cis-11-octadecenoic methyl ester (Supelco, Bellefonte, USA); methyl stearidionate (Fluka, Switzerland); Nu-Chek standards GLC-68D, GLC-85, GLC-411g (Nu-Chek, Minnesota, USA). The GLC-68D and GLC-85 standard mixtures were used to determine the response factor for each FA. The weight of each FA in the feed and fillets was determined using the response factor and the transformation factor of the FA content from the FAME content. The samples of feed and fillets were analyzed in duplicate. The FAMEs were expressed as weight percentages of the total FA content.

2.3 Data analysis
The data were analyzed for normal distributions using the UNIVARIATE procedure (SAS/STAT, USA). The differences according to the samples were analyzed through a general linear model procedure and Duncan test (SAS/STAT), with a 0.05 level of significance.

3. Results and discussion
Basic chemical and FA compositions of trout feed are presented in tables 1 and 2, respectively.

On average, 100 g of wet weight of trout feed contained 7.4±2.1 g of moisture, 47.7±5.0 g of proteins, 6.09±1.37 g of ash, 21.4±5.72 g of fat, and as for FA composition, 47.8±3.2 wt. % of total FAs were monounsaturated (MUFA), 34.0±2.4 wt. % were polyunsaturated (PUFA) and 18.1±1.1 wt. % were saturated fatty acid (SFA), with the PS ratio 1.88±0.12, 0.80±0.19 wt. % of trans FA and 3.28±0.94 wt. % of very long chain n-3 PUFA (data are not presented in tables).

The chemical composition of the ten trout feeds significantly differed (\(P < 0.001\)). The protein content in trout feed ranged from 39.9 to 55.0 g 100 g\(^{-1}\), fat content from 12.9 to 29.1 g 100 g\(^{-1}\), moisture content from 3.7 to 9.8 g 100 g\(^{-1}\) and ash content from 5.0 to 8.9 g 100 g\(^{-1}\). These amounts for chemical parameters found are in full agreement with data reported by Rasmussen et al. [20], who stated following data for rainbow trout feed: content of protein 47.0 g 100 g\(^{-1}\), fat 26.0 g 100 g\(^{-1}\), dry matter 94.3 g 100 g\(^{-1}\), and ash 7.5 g 100 g\(^{-1}\).

In all, 53 FAs were detected (> 0.01 g 100 g\(^{-1}\) FA) in the trout feeds; only thirteen of them are presented in table 2. For almost all FAs, their proportions and calculated nutrition information significantly differed between the different trout feeds (\(P \leq 0.001\)) except for C22:4n-6 (\(P = 0.355\)). The primary FA was oleic acid (C18:1cis-9), the content of which was 37.27±1.76 g 100 g\(^{-1}\) FA, followed by linoleic (C18:2cc n-6; 20.01±2.42 g 100 g\(^{-1}\) FA), palmitic (C16:0; 11.07±0.61 g 100 g\(^{-1}\) FA), \(\alpha\)-linolenic (C18:3n-3; 5.12±0.44 g 100 g\(^{-1}\) FA), and FAs in amount under 4 g 100 g\(^{-1}\) FA, such as stearic (C18:0; 3.43±0.58 g 100 g\(^{-1}\) FA), eicosapentaenoic (C20:5n-3; 2.90±0.58 g 100 g\(^{-1}\) FA), docosahexaenoic (C22:6n-3; 2.61±0.81 g 100 g\(^{-1}\) FA), palmitoleic (C16:1; 2.43±0.30 g 100 g\(^{-1}\) FA), gondoic (C20:1cis-11; 2.12±0.96 g 100 g\(^{-1}\) FA), and myristic (C14:0; 1.97±0.36 g 100 g\(^{-1}\) FA).

Basic chemical and FA compositions of farmed rainbow trout fillets are presented in tables 1 and 3, respectively.

On average, 100 g of wet weight of trout fillet contained 76.1±1.2 g of moisture, 21.4±0.9 g of proteins, 1.34±0.08 g of ash, 2.52±1.24 g of fat, and in FA composition, 42.1±5.1 wt. % of total FA were MUFA, 38.2±4.6 wt. % were PUFA, and 18.9±1.6 wt. % were SFA, with the PS ratio 2.01±0.27, n-6/n-3 ratio 0.98±0.28, 0.95±0.19 wt. % of trans FA and 13.25±4.72 wt. % of very long chain n-3 PUFA (data are not presented in tables).

The basic chemical composition of farmed rainbow fillets trout significantly differed between samples (\(P < 0.01\)), except for protein content (\(P = 0.071\)). The protein content in trout fillets ranged from 20.3 to 23.6 g 100 g\(^{-1}\), the fat content from 0.8 to 5.0 g 100 g\(^{-1}\), moisture content from 74.4 to
The nutritional quality of fat has been evaluated in terms of the ratio of PUFA:SFA (PS), the atherogenicity index (AI) [24], and the ratio of n-6/n-3 FA. In a balanced diet, the recommended ratio for PS is 0.4 or higher [25,26], for AI as low as possible, and for ratio n-6:n-3 less than 4 [27]. In this regard, our results showed that differences (P ≤ 0.001) in the PS ratio occurred between the different rainbow trout fillets, but the PS ratios ranged from 1.69 to 2.46, which is within the recommended range. Also determined AI values (0.20 to 0.28), which is considered as the rightful estimation for lipid nutritional quality, is also quite comparable with rabbit meat (0.70), deer meat (0.40 to 0.72), beef (0.51), lamb (1.07) and chicken (0.42) [28,29,30,31,32]. An unfavorable n-6/n-3 ratio of the PUFAs is considered to be a risk factor for cancer and coronary heart disease, so it is recommended that this n-6/n-3 ratio is < 4.0 [27]. In the present study, an average n-6/n-3 ratio of 0.98 was achieved, while in the literature that value was 0.62 for cultured rainbow trout by Stancheva et al. [33].

FA chains differ in length, often categorized from short to very long. Figure 2 shows the percentages of medium- (with aliphatic tails of 6 to 12 carbons), long- (with aliphatic tails of 13 to 21 carbons) and very long-chain (with aliphatic tails of 22 or more carbons) FA in feed (diet) source and in trout fillet lipids. On average, a greater percentage of very long chain FAs (i.e. C22:5n-3, C22:6n-3) in trout fillet in comparison with feed was detected, reflecting the lower percentage of some long chain FAs (i.e. C18:3n-3) in fillet compared to feed (figure 3). Furthermore, the n-3/n-6 ratios and percentages of very long chain n-3 PUFA revealed that these values were significantly higher (P ≤ 0.001) in the trout fillets than in the feeds (2.62 vs. 1.96; 16.8 vs. 7.4). According to Aslan et al. [34], FA composition of fish from aquaculture does not always depend on that of feed because of the fish metabolism. However, our data on the percentage of C18:3n-3, C20:5n-3 and C22:6n-3 observed in feed and fillets suggest an effect of feed (diet) source on metabolism of fat in trout fillet (Figure 3). It can be concluded that long chain n-3 PUFA from feed can be converted into very long chain n-3 PUFA in farmed rainbow trout fillets. This fact was also seen by Rebolé et al. [2], who showed that the level of C18:3n-6 was lower, whereas the level of C22:6n-3 was higher in the muscle than in the feed. This fact seems to support the documented effectiveness of rainbow trout and other freshwater fish species in elongating and desaturating precursor shorter-chain PUFAs to longer derived homologs [10,35].

There is scientific evidence that trans FA intake is associated with cardiovascular diseases in different ways [36]. Therefore, the recommendation for introducing trans FA in human body is limited to 1% of energy [37,38]. Naturally-occurring trans FAs produced in the gut of some animals and foods made from these animals (e.g., milk and meat products) can contain small quantities of these fats; low contents of trans FAs were also detected in our study (feed: 0.80±0.19 g 100 g⁻¹ FA; fillet: 0.95±0.19 g 100 g⁻¹ FA; data are not presented in tables). Twelve trans FA were detected in the feed and farmed
rainbow trout fillets, but just eight of them were present in amounts under the limit of detection (> 0.01 g 100 g⁻¹ FA) and taken into account in the calculation.

**Table 1.** Basic chemical composition of feed and farmed rainbow trout fillets.

| Parameter | Sample | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | SE⁻¹ P value |
|-----------|--------|----|----|----|----|----|----|----|----|----|----|----------------|
| Feed      |        |    |    |    |    |    |    |    |    |    |    |                |
| Protein   | 54.99⁺a| 47.85de | 39.86b | 49.59de | 47.99de | 51.57bc | 53.93ba | 41.51b| 43.87bc | 45.87fc | 1.37 ≤ 0.001 |
| Fat       | 22.74c | 28.66a | 22.58de | 29.07a | 12.88f | 25.28b | 23.39e | 21.20d | 13.86e | 14.64e | 0.18 ≤ 0.001 |
| Moisture  | 4.97c  | 5.32d | 5.17ed | 5.71bc | 8.53c  | 5.29ed | 5.54ed | 8.86a | 5.72bc | 5.79b | 0.63 ≤ 0.001 |
| Ash       | 8.39d  | 9.26b | 8.62ed | 6.70c  | 3.86f  | 8.94bc | 8.22d | 3.67f | 9.81a  | 6.96e | 0.22 ≤ 0.001 |
| Trout fillet |      |    |    |    |    |    |    |    |    |    |    |                |
| Protein   | 20.83bc | 20.47c | 21.06bc | 21.99bc | 21.42bc | 21.85bc | 22.56t | 22.49bc | 20.68e | 20.43c | 0.70 0.071   |
| Fat       | 4.39b  | 3.24d | 0.87f | 1.68e | 4.75a  | 1.36e | 2.61d | 2.29d | 1.63e | 2.41d | 0.15 ≤ 0.001 |
| Moisture  | 75.23b | 75.11bc | 77.91a | 77.07a | 74.60e | 77.40a | 74.94bc | 75.79b | 75.84b | 77.31a | 0.45 ≤ 0.001 |
| Ash       | 1.29bc | 1.27c | 1.27c | 1.38bc | 1.41a  | 1.39bc | 1.38bc | 1.46a | 1.27c | 1.24c | 0.04 0.004   |

a S - rainbow trout (Oncorhynchus mykiss)

*y Standard error of mean.

*z Statistical probability of sample effect.

* Means with a different superscript within rows (+) differ significantly.

**Table 2.** Fatty acid composition (selected fatty acids) and calculated nutritional information of fish feed.

| Fatty acid (FA) | Feed sample | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | SE⁻¹ P value |
|----------------|-------------|----|----|----|----|----|----|----|----|----|----|----------------|
| (g 100 g⁻¹ total FA) |             |    |    |    |    |    |    |    |    |    |    |                |
| C14:0          | 1.22bc      | 1.97d | 1.90c | 2.55u | 2.01c | 1.98d | 1.84f | 2.01c | 1.75c | 2.50b | 0.01 ≤ 0.001  |
| C14:1 cis-7    | 0.04b      | 0.04i | 0.04d | 0.08b | 0.07e | 0.04f | 0.04f | 0.07c | 0.04c | 0.10a | 0.00 ≤ 0.001  |
| C15:1 cis-5    | 0.01c      | 0.01dk | 0.01dk | 0.03a | 0.01c | 0.01dk | 0.01dk | 0.01d | 0.02b | 0.00 ≤ 0.001  |
| C16:0          | 10.59b     | 11.29d | 11.88c | 9.87f | 10.62c | 11.33dc | 11.55b | 10.57c | 11.40c | 11.59b | 0.05 ≤ 0.001  |
| C18:0          | 3.35c      | 3.91d | 3.61e | 2.89g | 2.76f | 3.95c | 4.03b | 2.75f | 4.28c | 2.80b | 0.01 ≤ 0.001  |
| C18:1 cis-9    | 40.08b     | 37.67c | 35.22d | 36.92d | 40.51b | 37.61c | 36.80d | 40.47b | 36.33c | 31.09b | 0.06 ≤ 0.001  |
| C18:2 cc n-6   | 23.58a     | 20.18b | 22.95b | 16.68c | 17.04f | 20.14e | 21.68c | 16.96c | 21.46d | 19.44f | 0.02 ≤ 0.001  |
| C18:3 n-3      | 5.87c      | 5.33c | 5.23c | 5.08f | 4.59c | 5.33c | 5.41b | 4.60c | 5.30d | 4.41b | 0.01 ≤ 0.001  |
| C20:4 n-6      | 0.28b      | 0.69c | 0.25f | 0.23g | 0.22h | 0.70b | 0.58d | 0.22b | 0.91a | 0.23g | 0.00 ≤ 0.001  |
| C20:5 n-3      | 1.65c      | 3.46b | 3.32c | 2.34b | 2.66d | 3.46b | 3.06d | 2.71f | 2.82c | 3.48g | 0.01 ≤ 0.001  |
| C22:4 n-6      | 0.13ba     | 0.14ba | 0.12ba | 0.07b | 0.12ba | 0.15a | 0.13ba | 0.12ba | 0.14a | 0.16a | 0.03 0.355    |
Table 3. Fatty acid composition and calculated nutritional information of farmed rainbow trout fillets.

| Fatty acid (FA) | Trout sample |
|----------------|-------------|
|                | (g 100 g⁻¹ total FA) | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | SE | P value |
| C14:0          | 1.15<sup>d</sup> | 1.67<sup>c</sup> | 1.19<sup>d</sup> | 1.19<sup>d</sup> | 1.70<sup>c</sup> | 0.99<sup>c</sup> | 1.51<sup>b</sup> | 1.48<sup>b</sup> | 1.31<sup>c</sup> | 1.41<sup>b</sup> | 0.05 ≤ 0.001 |
| C14:1cis-7     | 0.03<sup>c</sup> | 0.04<sup>b</sup> | 0.03<sup>c</sup> | 0.04<sup>b</sup> | 0.05<sup>a</sup> | 0.03<sup>d</sup> | 0.04<sup>b</sup> | 0.04<sup>b</sup> | 0.03<sup>c</sup> | 0.00 ≤ 0.001 |
| C16:0          | 11.49<sup>e</sup> | 12.14<sup>d</sup> | 11.07<sup>f</sup> | 13.15<sup>b</sup> | 11.88<sup>d</sup> | 11.75<sup>d</sup> | 12.64<sup>b</sup> | 11.39<sup>f</sup> | 15.56<sup>a</sup> | 11.42<sup>ef</sup> | 0.26 ≤ 0.001 |
C18:0  3.27d  3.29d  3.49e  3.06c  3.31d  3.10b  3.71b  3.05c  3.95a  2.85f  0.06 ≤ 0.001
C18:1cis-9  36.08a  35.68a  29.40c  24.33e  36.68a  27.86b  32.60b  36.14a  26.51d  32.55b  0.82 ≤ 0.001
C18:2n-6  19.88a  14.76e  18.06b  15.31de  16.24b  14.86c  14.35e  19.23d  0.49 ≤ 0.001
C18:3n-3  4.21a  3.01c  3.06e  3.18dce  3.27dc  3.27dc  3.28c  3.46b  3.14dce  3.09de  4.34a  0.08 ≤ 0.001
C20:4n-6  0.14a  0.12bac  0.07e  0.13ba  0.13ba  0.07ed  0.11bac  0.10dc  0.10bc  0.11bc  0.01 ≤ 0.0013
C20:5n-3  2.07gf  2.18f  3.48b  4.10a  1.79g  3.16cb  2.85cd  2.35ef  2.97cd  2.62ed  0.17 ≤ 0.001
C22:4n-6  0.06a  0.05b  0.00d  0.00d  0.05a  0.00d  0.04c  0.04c  0.00d  0.04c  0.00 ≤ 0.001
C22:5n-3  0.60c  0.68c  0.95b  0.94b  0.59c  1.22a  0.87b  0.87b  0.85b  0.87b  0.04 ≤ 0.001
C22:6n-3  7.04f  9.63e  13.10de  21.61a  8.57fe  17.98b  9.87e  10.94de  15.28c  9.28fe  1.07 ≤ 0.001
SFA  17.67de  18.94c  18.63c  19.06c  18.66c  18.66c  20.02b  17.64de  23.08a  17.44e  0.34 ≤ 0.001
MUFA  45.60b  47.37ba  39.15d  33.38e  48.30a  37.15d  42.95c  47.06ba  37.09d  43.32c  1.00 ≤ 0.001
PUFA  36.05e  32.97f  40.99c  46.96c  32.36c  43.67b  36.34c  34.77e  38.96d  38.50d  0.70 ≤ 0.001
n-3  14.55g  16.63feg  21.07dc  31.25a  15.49fg  26.14b  17.74g  16.31d  17.54ad  21.31a  0.48 ≤ 0.001
n-6  22.19a  17.06ed  21.16a  16.31d  17.54ad  18.37b  19.26b  16.83ad  16.57ad  21.37a  0.48 ≤ 0.001
n-6/n-3  1.53a  1.03ad  1.01ad  0.52f  1.13bc  0.71e  1.09bc  0.91d  0.71e  1.20b  0.06 ≤ 0.001
PS  2.04d  1.74f  2.20f  2.46f  1.73f  2.38b  1.81f  1.97e  1.69f  2.21i  0.03 ≤ 0.001
AI  0.21df  0.25b  0.21df  0.23c  0.24b  0.20#  0.25b  0.22d  0.28a  0.22d  0.00 ≤ 0.001
trans  0.91ed  1.05b  1.41a  0.71c  0.96ed  0.84ed  0.99b  0.81ed  0.86ed  0.93bd  0.07 ≤ 0.001
VLC n-3  7.70f  10.37e  14.10de  22.62a  9.24fe  19.28b  10.80f  11.91de  16.22e  10.24fe  1.11 ≤ 0.001

Abbreviations are explained in the legend of Table 2.

Figure 2. Percentage of medium-, long- and very long-chain fatty acids among total fatty acids in feed (diet) source (A) and in trout fillet lipids (B).
4. Conclusion
Preliminary studies in the field of FA and basic chemical composition of trout feed on one hand, and trout (*Oncorhynchus mykiss*) fillet meat on the other, showed that, despite wide variability between observed parameters, some conclusions can be drawn. In the present study, the FA profile and basic chemical composition of rainbow trout farmed in Slovenia were defined. On the basis of nutritional quality of the fat in the trout fillets, it can be concluded that rainbow trout farmed in Slovenia provides an important source of healthy fats, as it contains favorable n-3/n-6 ratios and PS and AI indices, all within recommended limits. Our data also suggest that long chain n-3 PUFA from feed can be converted into very long chain n-3 PUFA in trout fillets. From these points of view, farmed rainbow trout could be a healthy choice in human diet.

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