Analysis of Nutritional and Fatty Acid Composition of a Bowl of Meatball Soup in Malang, Indonesia

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ABSTRACT
This study aimed at analysing the nutritional and fatty acid composition of a bowl of meatball soup sold by 5 bakso Malang restaurants in Malang, Indonesia. The analysis was performed according to the instructions for food and beverage testing outlined in the Indonesian National Standard (SNI) 01-2891-1992. The results showed that the average nutritional value of a bowl of meatball soup consists of protein: 52.42-78.97g, fat: 33.16-59.22g, water: 193.57-285.61 g, ash: 14.76-24.15 g, carbohydrate: 73.84-84.23g, iron: 12.38-19.30 mg, calcium: 262.91-388 mg. Also, the level of unsaturated fatty acids is higher than saturated fatty acids with a ratio of 1:3:1.

Keywords: nutrition, fatty acid, bakso Malang

1. INTRODUCTION
Bakso or meatball soup is one of the most popular dishes from Malang city, East Java, Indonesia. It is a must-eat food when travelling to the city. Bakso Malang is available in many high-end restaurants and also sold by street vendors in food pushcarts or food stalls. There are several famous bakso Malang restaurant brands, one of which has expanded rapidly across the country by opening 200 franchises spread in 15 provinces [1]. According to [1], bakso is the most sold one-dish meal in Malang city (525 street food vendors). A bowl of bakso has been an all-time favourite not only due to its scrumptious taste but also owing to its variety of complementary ingredients. A typical bakso Malang consists of two kinds of meatballs, i.e. bakso halus (smooth meatballs) and bakso kasar (tendon meatballs), fried and steamed siomay (dumplings), noodle, tofu and others; some vendors even include quail eggs, kikil (cow skin) and others. With all these ingredients, a bowl of bakso is estimated to have a high nutritional content and therefore can serve as a substitute for a complete meal which usually consists of rice, side dishes and vegetables. As stated by [2], proteins of animal origin, such as those in meat, have a greater biological value than proteins from plant sources because the plant-based proteins lack some of the essential amino acids. Consumption of processed meat can also stimulate appetite and create a feeling of fullness.

In addition to taste, other aspects like nutrition and safety are key considerations to consumers in choosing their food. As stated by [3], consumers’ preferences for foods are influenced by several factors. Besides the social and cultural factors, food quality including flavour, taste and appearance, also have a profound influence on the consumers’ decisions in purchasing foods [4]. Organic food, local food and highly nutritious food are not only gaining popularity in developed countries but also in developing countries such as China and India [5]. A shift in consumerism occurred because local and highly nutritious food fulfils the modern consumers’ healthy lifestyle. Nowadays, more modern consumers prefer healthy and sustainable food choices. Consumers in some developing countries are beginning to show interest in understanding the entire process of food production to ensure food safety [6, p. 2012]. According to [7], most urban people nowadays want to develop and engage in the healthy eating behaviour.

Bakso Malang as the city’s prime culinary trademark will be more likely to be accepted by people across Indonesia and even the world if efforts to build trust and confidence among customers can be made more effectively. As stated by [8], local food and sustainable tourism can be developed by engaging with regional specialities, providing comfortable places and creating a positive image to tourists. The growth of tourism has an impact on sustainable economic, environmental and social-cultural growth [9]; [10]. The high incidence of food-related illnesses has created public alarm that makes consumers aware of the importance of food nutritional quality and safety [11]; [12].

Doubts have arisen over the safety of bakso products because some research findings have revealed that many marketed meatball products contain additives that endanger human health such as borax, formaldehyde, and other harmful substances. Previous studies found that many bakso producers in Medan, Semarang, Yogyakarta and some other cities in Indonesia use borax and formaldehyde as an emulsifier, exceed the maximum legal limit of using MSG and make meatballs out of poor quality ingredients. However, previous research of the author found that meatball products from the 5 most well-known bakso Malang restaurants are free from borax and formaldehyde and contain safe amounts of MSG. This research showed that the amount of MSG in 1 portion of meatball soup in Restaurant A: 557.08 mg, Restaurant B: 834.10 mg, Restaurant C: 639.93 mg, Restaurant D: 457.02 mg and Restaurant E: 703.82 mg. In other words, bakso sold by the 5 restaurants are safe for consumption because they do not exceed the maximum acceptable daily...
intake of MSG, i.e. 120 mg/kg body weight [13]. Regardless, consumers with concern about the fatty acid content in a bowl of meatball soup that can also endanger human health might still avoid consuming bakso. Fatty acids may increase blood cholesterol levels which are harmful to the heart and blood vessels. Fat consumption is also often associated with cancer. Studies have shown that consuming trans fatty acids has many adverse impacts on health such as heart disease, cancer, diabetes, reproduction and lactation, immunity, and obesity [14, p. 1]

Several studies on the nutritional value of meatballs have been conducted and found different results due to many factors, including the quality of raw materials, formulation of ingredients, production process and serving of final products. In this research, the aim was not only studying meatballs but also a bowl of meatball soup with its complementary ingredients which is very typical of bakso in Malang city, Indonesia. A portion of meatball soup in the five restaurants under study weighs from 217.81 g to 299.00 g and consists of smooth and tendon meatballs, steamed and fried dumplings, tofu, noodles, and 200 ml broth.

2. METHOD

A. Research Samples
The samples of bakso Malang were taken from five well-known restaurant brands in Malang. A bowl of bakso from each restaurant contained two medium-sized, smooth meatballs, one tendon meatball, tofu, steamed dumplings, two types of fried dumplings, yellow noodles and 200 ml broth. The weight of each of the five bowls of bakso Malang is shown in Table 1.

| Ingredient                        | Restaurant A | Restaurant B | Restaurant C | Restaurant D | Restaurant E |
|-----------------------------------|--------------|--------------|--------------|--------------|--------------|
| Tendon meatball (g)               | 28.19        | 25.28        | 40.22        | 18.16        | 20.32        |
| Smooth meatball (g)               | 43.07        | 40.03        | 50.12        | 38.54        | 35.88        |
| Tofu (g)                          | 80.17        | 63.71        | 38.63        | 45.60        | 62.66        |
| Noodle (g)                        | 45.43        | 42.49        | 23.92        | 55.22        | 40.13        |
| Steamed dumpling (g)              | 40.03        | 45.61        | 35.59        | 36.08        | 40.19        |
| Fried dumpling (pouch-shaped) (g) | 20.16        | 43.12        | 42.44        | 19.60        | 28.65        |
| Fried dumpling (round shaped) (g) | 15.75        | 38.76        | 36.47        | 17.13        | 30.11        |
| **Total (g)**                     | **272.80**   | **299.00**   | **267.39**   | **230.33**   | **217.81**   |
| + Broth (ml)                      | 200          | 200          | 200          | 200          | 200          |

B. Research Design
The analysis of the nutritional value (protein, carbohydrate, fat, calcium (Ca), iron (Fe), ash and water contents) and fatty acid composition was performed according to the instructions for food and beverage testing set forth in the Indonesian National Standard (SNI) 01-2891-1992 (BSN, 1992).

| Type of Analysis | Type of Test | Method                                      |
|------------------|--------------|---------------------------------------------|
| Proximate Analysis | Protein content analysis | Macro-Kjeldahl (AOAC)                        |
|                  | Calorie (carbohydrate) content analysis | Qualitative and quantitative analysis with the principles of chromatography |
|                  | Fat content analysis | Soxhlet extraction                          |
|                  | Calcium (Ca) content analysis | Atomic absorption spectrophotometry (AAS)    |
|                  | Iron (Fe) content analysis | One-way ANOVA                               |
|                  | Water content analysis | Oven-drying                                  |
|                  | Ash content analysis | Ash furnace analysis                         |
|                  | Fatty acid content analysis | Chromatography                               |
### C. Apparatus and Materials

Table 3. Materials and Equipment Utilised during the Experiment

| No. | Type of Analysis              | Equipment                                                                 | Material                                                                                                                                                                                                 |
|-----|-------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Protein Content Analysis      | Analytical balance, measuring pipette, rubber suction cup, Kjeldahl flask, destructor, fume hood, distillation apparatus, Erlenmeyer flask, burette, static, clamp, dropper, volumetric flask, mortar & pestle, spatula | Concentrated H<sub>2</sub>SO<sub>4</sub> p.a., Na<sub>2</sub>SO<sub>4</sub>-HgO (20:1), NaOH - Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>, aquades, methylene red, methylene blue, ethanol 95%, HCl, H<sub>3</sub>BO<sub>3</sub>. |
| 2   | Fat content analysis          | Analytical balance, mortar & pestle, oven, heater, filter paper, measuring cup, soxhlet extraction set, beaker, desiccator       | Petroleum ether or hexane, Filter cloth or paper                                                                                                                                                    |
| 3   | Calcium content analysis      | Analytical balance, measuring pipette, rubber suction cup, volumetric flask, test tube, cuvette, spectrophotometer            | Standard CaCl<sub>2</sub> solution, Reagent test kit (calcium cell test, Merck Spectroquant), HCl 1 N, Dissolve 82.9 ml of concentrated HCl p.a in distilled water (aquades) and make up to 1000 ml with distilled water, NaOH 1 M, Dissolve 40 g of sample in aquades and make up the volume to 1000 ml with aquades, H<sub>2</sub>SO<sub>4</sub> 0.5 M, Dissolve 27.7 ml of concentrated H<sub>2</sub>SO<sub>4</sub> p.a in aquades and make up the volume to 1000 ml with aquades, Aquades |
| 4   | Iron content analysis         | Analytical balance, measuring pipette, rubber suction cup, volumetric flask, test tube, cuvette, spectrophotometer            | Standard FeCl<sub>3</sub> solution, Reagent test kit (iron cell test, Merck Spectroquant), HCl 1 N, Dissolve 82.9 ml of concentrated HCl p.a and make up to 1000 ml with distilled water, NaOH 1 M, Dissolve 40 g of sample in aquades and make up the volume to 1000 ml with aquades, Aquades |
| 5   | Water content analysis        | Weighing bottle, oven, desiccator, analytical balance                      | Silica gel                                                                                                                                         |
| 6   | Ash content analysis          | Ash crucible, furnace, desiccator, analytical balance                      | Silica gel                                                                                                                                         |
| 7   | Fatty acid content analysis   | Gas chromatography, analytical balance, beaker, bottle with lid, measuring pipette, rubber suction cup, oven                  | Na sulfate, hexane, acetone, ethanol, KOH, diethyl ether, diazomethane                                                                            |
3. RESULTS AND DISCUSSION

A. Nutritional Composition of One Portion of Meatball Soup and a Single Meatball of 100 g in 5 Restaurants of Bakso Malang

Table 4 and 5 present the results of nutritional analysis of one portion of meatball soup and a single meatball (100 gr) including the contents of calories, protein, fat, calcium, iron and water.

Table 4. Nutritional Composition of a Bowl of Bakso Malang Soup (Portion Size for 1 Serving)

| Nutritional Composition | Restaurant A | Restaurant B | Restaurant C | Restaurant D | Restaurant E |
|-------------------------|--------------|--------------|--------------|--------------|--------------|
| Volume/portion          | 272.80 gr + 200 ml broth | 299.00 + 200 ml broth | 267.39 + 200 ml broth | 230.33 + 200 ml broth | 217.81 + 200 ml broth |
| Calorie (cal)           | 1126.82      | 1255.80      | 1113.65      | 855.93       | 1088.83      |
| Protein (g)             | 78.97        | 77.18        | 71.77        | 52.42        | 70.85        |
| Fat (g)                 | 47.38        | 59.22        | 47.76        | 33.16        | 44.73        |
| Water (g)               | 261.08       | 285.61       | 253.59       | 193.57       | 242.26       |
| Ash (g)                 | 24.15        | 21.94        | 20.16        | 14.76        | 21.84        |
| Carbohydrate (g)        | 76.38        | 84.23        | 81.25        | 73.84        | 82.99        |
| Iron (mg)               | 19.30        | 18.74        | 19.12        | 12.38        | 16.94        |
| Calcium (mg)            | 381.24       | 388.58       | 374.75       | 262.91       | 346.23       |

Table 5. Nutritional Composition of a Single Meatball (100 G) of Bakso Malang

| Nutritional Composition | Restaurant A | Restaurant B | Restaurant C | Restaurant D | Restaurant E |
|-------------------------|--------------|--------------|--------------|--------------|--------------|
| Calorie (cal)           | 230.92       | 237.76       | 234.68       | 232.74       | 235.33       |
| Protein (g)             | 16.18        | 14.61        | 15.12        | 14.25        | 15.31        |
| Fat (g)                 | 9.71         | 11.21        | 10.06        | 9.02         | 9.68         |
| Water (g)               | 53.50        | 54.07        | 53.44        | 52.64        | 52.36        |
| Ash (g)                 | 4.95         | 4.15         | 4.25         | 4.01         | 4.72         |
| Carbohydrate (g)        | 15.65        | 15.95        | 17.12        | 20.08        | 17.94        |
| Iron (mg)               | 3.96         | 3.55         | 4.03         | 3.36         | 3.66         |
| Calcium (mg)            | 78.13        | 73.57        | 78.97        | 71.49        | 74.83        |

Table 4 and 5 suggest that the meatball products sold by the five Bakso Malang restaurants have almost the same nutritional value in all observed nutritional parameters. The calorific value of each 100 g meatball ranges from 230-237 calories, while that of each bowl of meatball soup ranges from 1088 to 1255 calories.

The protein content of a 100-g meatball in all restaurants under study is also nearly equal, i.e. 14-16 g. However, the protein content in a bowl of meatball soup (portion size for 1 serving) is slightly different. A bowl of meatball soup by Restaurant A has the highest protein content of 16.18 g. Based on the research conducted by [15], the ratio of meat to flour used to make meatballs at Restaurant A is 70:30, while in other places the commonly used ratio of meat to flour is 60:40, hence the result above. Also, the raw materials used are fresh pre-rigour meat cuts, namely silverside. [16] explained that the right beef cuts for meatball production are topside, silverside and cube roll. These three parts have higher protein contents, the highest brightness and redness and the lowest fat content. The quality of food protein is determined by its composition of essential amino acids. Animal-based foods contain a more complete panel of amino acids than plant-based foods, therefore animal-based foods are excellent sources of protein [17]. Another contributing factor to the protein content of processed meat is the use of table salt (NaCl) as the condiment. As found by [18], the higher the addition of NaCl, the lower the protein level in meatballs.

The addition of NaCl results in a decrease in protein content, hence the result above. Additions of sodium chloride cause the reaction of covalent bonds between proteins that are in proteins. A decrease in protein content will be to the space between the filaments to increase. Positively charged groups may bind to the total protein, so that repulsive forces occur between filaments. The repulsive forces cause the space between the filaments to increase, giving more space to bind more water. In other words, the addition of NaCl results in a decrease in protein content but a rise in water content. In addition, factors related to the thermal processing of meat such as temperature and heating time may cause both expected and unexpected reactions [19] [20].

All of the five Bakso Malang restaurants also produce meatballs with almost the same fat content, i.e. 9-11 g in a
single meatball of 100 g. However, the fat level in a bowl of meatball soup by each restaurant is slightly different. The meatball soup by Restaurant D contains the lowest fat, which is 33.16 g per portion. The other four restaurants sell meatball soup with a fat level of 47-59 g per portion. At Restaurant D, they choose their ingredients, particularly meat, very carefully. In producing meatballs and broth, they use high-quality fat-free meat—hence clear broth. In addition, the heating process also affects the decrease in the fat content of meatballs [21]. Not only fat but thermal processing of food can also reduce fatty acids, both essential and non-essential. The fat content of raw beef reaches an average of 17.2%, whereas beef cooked at 60°C experiences a decrease in fat to 11.2–13.2% [21].

A single 100-g meatball sold by all restaurants under study has nearly similar water content, i.e. 52-54 g. The water content in a bowl of meatball soup, however, is slightly different in each bakso Malang restaurant. The meatball soup by Restaurant D contains the lowest water, which is 193.57 g per portion. A bowl of meatball soup with the highest water level (i.e. 285.61 g) is sold by Restaurant B. The difference in water content in each portion of meatball soup can be caused by the different amount of NaCl added. [22] stated that NaCl content contributes to the amount of water in food; the higher the NaCl concentration, the higher the water content. In addition to NaCl, heating temperature and time can affect water content. Food subjected to the heating process will have a reduced water content [23]. Therefore, the increase in temperature causes the evaporation rate to rise, allowing more water molecules in bakso to dissipate into the air. The ash content is a manifestation of mineral content in the ingredients. The ash content of a 100-g meatball in all restaurants under study is nearly the same, i.e. 4.01-4.95 g. However, the ash content in a bowl of meatball soup is slightly different in each bakso Malang restaurant. The meatball soup by Restaurant D contains the lowest ash, which is 14.76 g per portion. The other four restaurants sell meatball soup with an ash level of 20-24 g per portion. According to [24], the higher the amount of NaCl added, the higher the ash content produced. It occurs because salt is an inorganic material which is a constituent component of ash. Most food ingredients consist of organic material and water (96%), and the rest is mineral elements [25].

The iron (Fe) content of a bowl of meatball soup in all restaurants under study is nearly the same, i.e. 12.38-19.3 g, while the calcium content (Ca) ranges from 262.91 to 388.58 g. Based on the above findings, the nutritional composition of a bowl of bakso Malang can serve as an alternative to lunch meals with a fairly rich in nutrients. The nutritional composition of 1 portion of bakso Malang compared to daily nutritional requirements for adults is presented in Table 6.

### Table 6. Comparison between Nutritional Composition of One Portion of Bakso Malang and Daily Nutritional Requirements for Adults Based on Recommended Dietary Allowances or Angka Kecukupan Gizi (AKG) [26]; [27]

| Nutritional Composition | A Portion of Bakso Malang | Daily Nutritional Requirements for Adults Based on Recommended Dietary Allowances (AKG) [26] |
|-------------------------|---------------------------|---------------------------------------------------------------------------------------------|
| Energy/Calorie (Kcal)   | 855.93-1255.80            | P: 1700-2200; L: 2400-2800                                                               |
| Protein (gr)            | 52.42-78.97               | P: 48-62; L: 55-66                                                                      |
| Fat (gr)                | 36.16-59.22               | 10-25% of calorie needs (60 g/day)                                                        |
| Calcium (mg)            | 374.75-388.58             | P: 600; L: 500                                                                           |
| Iron (mg)               | 12.38-19.30               | 26 mg P/L                                                                                |
| Water (g)               | 193.57-261.08             | 2000 ml – 2500 ml                                                                        |
| Carbohydrate (g)        | 73.84-84.23               | 60-70% of calorie needs                                                                  |

Table 6 shows that the nutritional value of a bowl of bakso Malang is adequate to meet nutritional needs for 1 lunch meal; Indonesians generally eat 3 meals a day, i.e. breakfast, lunch and dinner. However, the fat content of 1 bowl of meatball soup by Restaurant B is 59.22 gr, which exceeds the recommended daily fat intake. According to (Organization, Organization, & Organization, 2013) and (Council, n.d.), the total fat content of the diet should be no more than 60 g or 30% of total daily calories. The fat content of meatball soup mainly comes from the beef bone broth. Beef bones contain approximately 50% water, 50% marrow and 96% fat [28]. On top of that, other complementary ingredients in bakso such as fried dumplings contribute to the high-fat content.
B. Fatty Acid Composition of a Single Bakso Malang Meatball of 100 g in 5 Restaurants of Bakso Malang

Table 7 Fatty Acid Composition of a Single Meatball of 100 g in 5 Restaurants of Bakso Malang

| Fatty Acid Composition | Restaurant A (mg) | Restaurant B (mg) | Restaurant C (mg) | Restaurant D (mg) | Restaurant E (mg) |
|------------------------|------------------|------------------|------------------|------------------|------------------|
| C14:0 Myristic acid    | 240.94           | 279.70           | 248.16           | 225.47           | 238.47           |
| C16:0 Palmitic acid    | 2395.58          | 2764.52          | 2471.97          | 2221.50          | 2373.31          |
| C16:1 (n-7) Palmitoleic acid | 453.18         | 505.86           | 467.47           | 420.12           | 443.20           |
| C18:0 Stearic acid     | 1539.96          | 1769.65          | 1589.50          | 1429.27          | 1522.45          |
| C18:1 (n-9) trans Elaidic acid | 241.30          | 286.65           | 258.23           | 228.26           | 246.39           |
| C18:1 (n-9) cis Oleic acid | 3900.96         | 4508.40          | 4001.15          | 3625.85          | 3876.45          |
| C18:1 (n-7) trans Vaccenic acid | 152.02          | 170.73           | 161.41           | 142.51           | 150.14           |
| C18:2 (n-6) Linoleic acid | 307.30           | 349.98           | 315.35           | 285.23           | 304.92           |
| C18:6 (n-3) γ Linolenic acid | 2.87             | 3.28             | 3.27             | 2.71             | 2.89             |
| C18:3 (n-3) α Linolenic acid | 144.37          | 163.41           | 151.75           | 134.47           | 141.92           |
| C20:2 (n-6) Eicosadienoic acid | 3.03            | 3.44             | 2.88             | 2.63             | 2.97             |
| C20:3 (n-6) Dihomo γ linolenic acid | 37.57           | 41.67            | 39.11            | 35.17            | 38.11            |
| C20:3 (n-3) Eicosatrienoic acid | 3.94            | 4.26             | 4.01             | 3.67             | 3.87             |
| C20:4 (n-3) Eicosaetraenoic acid | 115.71          | 133.48           | 115.64           | 106.12           | 115.51           |
| C20:4 (n-6) Arachidonic acid | 29.18            | 31.55            | 30.90            | 26.15            | 29.12            |
| C20:5 (n-3) Eicosapentaenoic acid | 78.03          | 89.76            | 80.73            | 72.59            | 76.54            |
| C22:4 (n-6) Docosatetraenoic acid | 9.42             | 11.20            | 10.41            | 8.76             | 9.38             |
| C22:6 (n-3) Docosahexaenoic acid | 9.28             | 11.22            | 9.87             | 9.06             | 9.50             |

Table 7 shows that the fatty acid composition of a single meatball of 100 g produced by all restaurants under study is nearly the same. The fatty acids contained in a meatball include saturated fatty acids and unsaturated fatty acids. The saturated fatty acids are myristic acid, palmitic acid, stearic acid. The monounsaturated fatty acids include palmitoleic acid, trans elaidic acid, cis oleic acid, trans vaccenic acid. The polyunsaturated fatty acids are linoleic acid, γ linolenic acid, α linolenic acid, eicosadienoic acid, dihomo γ linolenic acid, eicosatrienoic acid, eicosatetraenoic acid, arachidonic acid, eicosapentaenoic acid, docosatetraenoic acid and docosahexaenoic acid.

The level of unsaturated fatty acids is slightly higher than saturated fatty acids in all meatball samples. The ratio of saturated fatty acids to unsaturated fatty acids is 1:1.3. The amount of monounsaturated fatty acids is larger than polyunsaturated fatty acids in all meatball samples. The ratio of monounsaturated fatty acids to polyunsaturated fatty acids is 1:0.1. According to [29], trans fats are considered more harmful than saturated fats because saturated fats only raise LDL cholesterol but do not affect HDL cholesterol. Epidemiological studies have found that high-fat foods are closely linked to colon cancer and breast cancer. Low-fat and high-fibre intake such as in the vegetarian diet can reduce the number of cancer cases [30]. Also, high consumption of saturated fats causes the liver to produce large amounts of LDL cholesterol which increases the chance of having heart disease and also results in an increase in blood cholesterol levels which is a major risk factor for thrombosis [31]. Obesity is also always associated with the consumption of foods high in saturated fats or calorie content [32]. The secondary products of the oxidation of polyunsaturated fatty acids, particularly volatile aldehydes and ketones, influence the
taste and odour of meat and processed meat products by degradation [33]. There have been some restrictions on meat intake due to the saturated fat, cholesterol and salt contents and their relationship to certain types of cancer [34]. Several studies have led us to the conclusion that the tolerable upper limit of trans fatty acid intake is about 2% of the number of total calories. The amount of trans unsaturated fatty acids in a 100-gr meatball produced by the 5 bakso Malang restaurants ranges from 370.78 to 457.38 mg.

4. CONCLUSIONS

This research has highlighted the following findings. 1) The portion of meatball soup in the 5 most famous bakso Malang restaurants can serve as a substitute for main course meal since its nutritional composition (calorie, protein, fat, carbohydrate, water, iron and ash contents) has satisfied the daily nutritional requirements for adults. However, the fat content of 1 bowl of meatball soup by Restaurant B is 59.22 gr, which exceeds the recommended daily fat intake which should be no more than 60 g or 30% of total daily calories. (2) The fatty acids contained in a meatball include saturated fatty acids and unsaturated fatty acids with a ratio of 1:1.3. The ratio of monounsaturated fatty acids to polyunsaturated fatty acids is 1:0.1.

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