

Nutrient Content of Traditional Food in the Tourism Area of Buleleng Regency, Bali Province

I Gusti Putu Sudita Puryana¹, Ni Putu Agustini¹, I Putu Suiraoaka^{1,2}

¹Lecture at Nutrition Departement, Polytechnic of Health Denpasar, ²Researcher in Tourism Health Center of Excellent, Polytechnic of Health Denpasar

Abstract

The development of traditional foods must be supported by complete information about these traditional foods. The information needed includes name, regional origin, shape or appearance, taste, and nutrient content. This study aims to determine the nutritional content of traditional foods in Buleleng Regency.

The study is descriptive observational. There are 6 types of traditional foods namely snacks, vegetables, drinks, side dishes, complete meals and chili sauce with a total of 93, but 40 traditional foods are analyzed.

The content of nutrients in traditional food in Buleleng Regency are water levels ranging from 11.62 - 93.43%, ash content in the range of 0.05 - 13.67%, fat content in the range of 0.18 - 28.32%, protein in the range of 0.33 - 23.26%, carbohydrates in the range of 1.58 - 74.01%, and total energy ranges from 25.21 - 386.40 Cal. Energy Adequacy Rate and Protein Adequacy Rate The highest average is found in traditional side dishes, which is 11.63 Cal and 30.77 g.

Keywords: *traditional food, nutrients, energy, fat, carbohydrates, protein*

Background

Traditional food is food, snacks, beverage and mixed ingredients that have traditionally been used and developed in regions or Indonesian society ⁽¹⁾. Traditional food has an important role in the local identity of a region, consumer behavior, cultural transfer, and heritage for future generations ⁽²⁾. In the field of tourism, traditional food is an attraction for tourists and gives a deep impression to them. Traditional food is a gateway to other cultures through its taste and preparation process ⁽³⁾.

Traditional food consists of food and drinks including snacks and mixtures that have been passed down for generations produced or consumed, using locally produced ingredients, processed in a typical manner with a distinctive taste received by the community ⁽⁴⁾ ⁽⁵⁾ ⁽²⁾.

Traditional food is very closely related to local customs, where these dishes are processed, served and eaten in a sustainable or hereditary way by the community by using local ingredients, helping the community to consume diverse, nutritious and balanced and safe food ⁽⁶⁾ ⁽⁷⁾. Traditional foods contribute to people's daily food and nutritional evaluation of traditional foods is needed to accurately estimate people's food intake ⁽⁸⁾.

Balinese traditional food is plentiful, has a variety of types and nutritional content, raw materials used in processing are available locally and have flavors that are preferred by most people in Bali ⁽⁵⁾. Traditional foods are classified into two major groups namely staple foods (rice, side dishes, and sambal) and snacks (beverage, salad, snacks, chips, and beans)⁽⁶⁾.

The development of traditional foods must be supported by complete information, both in terms of name, origin, shape or appearance, taste, and nutritional content. ⁽⁵⁾. Consuming traditional foods must be accompanied by knowledge of traditional food nutrients so that they can be used as an alternative diet in maintaining body shape ⁽⁹⁾. One way to identify

Correspondent author:

Gusti Putu Sudita Puryana

email: suditayana@gmail.com

traditional foods and nutrients can be done through competitions or traditional food exhibitions⁽¹⁰⁾

Referring to the potential that exists in traditional Balinese food and the prospect of developing good functional food in the future, the development of traditional Balinese food can be directed into functional food with the priority of its development to become Balinese souvenirs⁽⁵⁾.

The purpose of this study was to determine the nutritional content of traditional foods in the tourism area of Buleleng Regency, Bali Province.

Research Methods

This research is an observational study, in which the researcher observes and analyzes the nutritional content of traditional foods in Buleleng Regency, Bali. Identification of types and quantities of traditional food is done by survey method. Measurement of water content using the Oven Method (SNI 01 - 2891 - 1992 point 5.1. Food and beverage test method), fat content by the Soxhlet method, ash content is determined by dry method (SNI 01 - 2891 - 1992 item 6.1. Food and beverage test method), the protein content is determined by the Semimicro Kjeldahl method (SNI 01-2891-1992 item 7

How to test food and drinks), and the determination of carbohydrates by means of rough calculations (proximat analysis) or also called Carbohydrate by Difference (11). Data analysis was performed descriptively for each of the variables observed in this study.

Result

Sampling was carried out in 10 villages in Buleleng Regency, namely Tejakula, Les, Sambirenteng, Tembok, Sangsit, Bungkulan, Penglatan, Ringdikit, Lokapaksa, and Sukasada Villages. Based on a survey in Buleleng Regency, 93 types of traditional food can be identified. The types of traditional food taken as a sample are 40 types of food (43.0%) of all identified traditional foods consisting of; 19 types of snacks (47.5%), 6 types of vegetables (15.0%), 6 types of side dishes (15.0%), 4 types of complete food (10.0%), 3 types of beverage (7.5%), and 2 types of Sambal (5.0%).

1. Nutritional Content of Traditional Foods

a. Traditional snacks

Types of snacks are the largest proportion of traditional foods in Buleleng Regency. The results of the analysis of the nutrient content of snacks are as shown in Table 1.

Table 1: Nutrient Analysis Results in Types of Traditional Snacks

| No | Sample Name | Water content (%) | Ash Rate (%) | Fat level (%) | Protein Level (%) | Carbohydrate Level (%) | Energy (kcal) |
|----|---------------|-------------------|--------------|---------------|-------------------|------------------------|---------------|
| 1 | Tulud | 50.70 | 0.676 | 2.36 | 4.46 | 41.80 | 206.30 |
| 2 | Sumping Kuwud | 48.96 | 0.815 | 3.67 | 3.70 | 42.86 | 219.24 |
| 3 | Jaja Kupe | 47.23 | 0.757 | 6.44 | 3.47 | 42.11 | 240.25 |
| 4 | Cerorot | 47.70 | 0.616 | 0.30 | 4.00 | 47.39 | 208.24 |
| 5 | Jaja Pesor | 56.76 | 0.695 | 4.42 | 4.30 | 33.83 | 192.31 |
| 6 | Dodol | 19.70 | 0.734 | 1.44 | 4.12 | 74.00 | 325.49 |
| 7 | Layah Sapi | 67.23 | 0.679 | 2.11 | 2.19 | 14.80 | 86.96 |
| 8 | Jaja Gadung | 66.65 | 1.139 | 5.69 | 1.83 | 24.70 | 157.31 |
| 9 | Jaja Beras | 58.47 | 0.532 | 2.81 | 2.47 | 35.72 | 178.01 |
| 10 | Jaja Sirat | 40.28 | 0.792 | 11.36 | 2.96 | 44.61 | 292.53 |
| 11 | Jaja Olen | 54.95 | 0.371 | 6.26 | 3.76 | 34.65 | 210.05 |
| 12 | Jaja Putu | 21.36 | 1.390 | 5.56 | 3.84 | 67.85 | 336.82 |
| 13 | Bantal Tepung | 37.60 | 0.695 | 10.28 | 5.01 | 46.41 | 298.22 |
| 14 | Jaja Remu | 59.29 | 0.571 | 2.55 | 3.69 | 33.91 | 173.30 |
| 15 | Jaja Klaudan | 56.63 | 1.717 | 3.86 | 4.00 | 33.80 | 185.89 |

Cont... Table 1: Nutrient Analysis Results in Types of Traditional Snacks

| | | | | | | | |
|----|-------------|-------|-------|-------|------|-------|--------|
| 16 | jaja Tumbeg | 19.84 | 0.453 | 13.52 | 3.20 | 62.99 | 386.40 |
| 17 | Jaja Orog | 14.48 | 0.962 | 6.70 | 5.60 | 72.26 | 371.70 |
| 18 | Jaja Keladi | 39.69 | 2.052 | 6.57 | 3.97 | 47.71 | 265.89 |
| 19 | Bulung | 90.27 | 0.61 | 0.43 | 1.41 | 7.29 | 38.63 |
| | Average | 47.25 | 1.54 | 5.07 | 3.58 | 42.56 | 230.19 |

b. Vegetable and Side Dish

Vegetable is a dish that is served with staple food served with soup or without sauce. Side dishes are a source of protein. Vegetable and side dishes samples analyzed in this study as in Table 2.

Table 2: Nutrient Analysis Results in Traditional Vegetable Types and Side Dishes

| No | Sample Name | Water content (%) | Ash Rate (%) | Fat level (%) | Protein Level (%) | Carbohydrate Level (%) | Energy (kcal) |
|----|------------------------|-------------------|--------------|---------------|-------------------|------------------------|---------------|
| A | Vegetables | | | | | | |
| 1 | Plecing Montong Keladi | 88.11 | 2.02 | 1.79 | 2.37 | 5.70 | 48.41 |
| 2 | Jukut Kelor | 79.91 | 1.81 | 2.30 | 5.49 | 10.48 | 84.62 |
| 3 | Kelentang | 88.86 | 0.05 | 0.28 | 3.03 | 7.78 | 45.74 |
| 4 | Jukut Buangit | 70.36 | 0.69 | 1.25 | 6.35 | 21.35 | 122.07 |
| 5 | Jukut Rambanan | 74.96 | 1.32 | 4.91 | 2.11 | 16.69 | 119.41 |
| 6 | Jukut Undis | 77.53 | 0.92 | 1.24 | 1.60 | 18.72 | 92.45 |
| | Average | 79.96 | 1.14 | 1.96 | 3.49 | 13.45 | 85.45 |
| B | Side Dishses | | | | | | |
| 1 | Lawar Getih | 60.04 | 2.00 | 23.28 | 5.74 | 8.93 | 268.24 |
| 2 | Sudang Lepet | 11.62 | 6.26 | 1.49 | 21.64 | 58.99 | 335.89 |
| 3 | Be Siap Serati | 65.79 | 3.81 | 5.95 | 20.53 | 3.92 | 151.36 |
| 4 | Lawar Kebo | 59.08 | 1.07 | 7.43 | 15.01 | 17.40 | 196.56 |
| 5 | Muluk Gajian | 48.03 | 2.35 | 28.32 | 19.73 | 1.57 | 340.07 |
| 6 | Plongos | 58.77 | 3.69 | 4.72 | 22.59 | 10.24 | 173.75 |
| | Average | 50.56 | 3.20 | 11.86 | 17.54 | 16.84 | 244.06 |

c. Complete food and Sambal

This complete food is a ready-to-eat food consisting of a source of carbohydrates in the form of rice, rice, or noodles, side dishes, and vegetables. Sambal is one of the special elements of Indonesian and Malay dishes. Traditional beverage are beverage made from local food raw materials, which are usually intended to relieve thirst, sometimes even as medicine. The results of the analysis of nutrients can be seen in Table 3.

Table 3: Nutrition Substance Analysis Results in Traditional Complete Foods, Sambal's and Beverage

| No | Sample Name | Water content (%) | Ash Rate (%) | Fat level (%) | Protein Level (%) | Carbohydrate Level (%) | Energy (kcal) |
|----|---------------------|-------------------|--------------|---------------|-------------------|------------------------|---------------|
| A | Complete Food | | | | | | |
| 1 | Nasi Bayam | 75.18 | 1.74 | 4.08 | 16.05 | 2.94 | 112.71 |
| 2 | Belayag Be Pasih | 62.42 | 1.16 | 2.20 | 20.25 | 13.96 | 156.67 |
| 3 | Blayag Siap | 71.40 | 1.47 | 4.33 | 12.77 | 10.03 | 130.15 |
| 4 | Mangguh Cina | 67.77 | 0.79 | 6.67 | 3.67 | 21.10 | 159.11 |
| | Average | 69.20 | 1.29 | 4.32 | 13.19 | 12.01 | 139.66 |
| B | Sambal's | | | | | | |
| 1 | Sambal Tuwung | 70.88 | 1.09 | 4.65 | 3.59 | 19.79 | 135.36 |
| 2 | Sambel Batun Kacang | 41.10 | 7.52 | 9.14 | 23.26 | 18.98 | 251.22 |
| | Average | 55.99 | 4.31 | 6.89 | 13.43 | 19.38 | 193.29 |
| C | Beverage | | | | | | |
| 1 | Loloh Blimbing | 93.43 | 0.49 | 0.18 | 0.44 | 5.46 | 25.21 |
| 2 | Es Ancruk | 67.52 | 0.19 | 1.70 | 0.48 | 30.11 | 137.63 |
| 3 | Cendol Kelor | 78.76 | 0.23 | 1.93 | 0.33 | 18.75 | 93.70 |
| | Average | 79.90 | 0.31 | 1.27 | 0.42 | 18.11 | 85.51 |

Discussion

1. Snacks

Based on the test results of water content, traditional snacks are classified in the groups of snacks with low water content or dry snacks, semi-wet snacks, namely snacks with moderate water content, and wet snacks, namely snacks with high water content. Water content in the types of snacks is related to the shelf life of these snacks.

The average water content in traditional snacks in Buleleng Regency is 47.25%, with a water content range of 14.48% - 90.27%. The lowest water content is in Jaja Oog, where in Jaja Oog does not use a lot of water and is indeed cooked until dry, while the highest water content is in Jaja Bulung because seaweed which is the basic ingredient of making bung is added a lot of water and the ingredients are liquid which is rather thick and allowed to become solid like jelly so that the highest water content.

Protein content in the types of snacks is 5.07%, with a range of 0.43% - 13.52%. The variation of protein content in traditional snacks depends on the composition of the ingredients used and the water content of the snacks.

The level of fat in traditional snacks in Buleleng Regency is on average 3.58%, with a range of 1.41% - 5.60%. The value of the range of fat content in snacks is not too high, it depends on the composition of the ingredients and the way of processing of the snacks. Traditional snacks prepared by frying will have higher fat content. The average carbohydrate content of traditional snacks in Buleleng Regency is 42.56% with a range between 7.29% - 74.00%.

The range of carbohydrate content in the types of snacks is very high. This is caused by the composition of the ingredients used and the water content of these snacks. Jaja bulung is a snack with the lowest carbohydrate content, because the water content of these snacks is very high at 90.27%, while dodol has the highest carbohydrate content because dodol is a semi-wet snack with a water content of 19.70%, with the basic ingredients of flour and sugar which is a group of food sources of carbohydrates.

2. Vegetables

Based on the results of the analysis of the water content of all types of vegetables classified in dishes with high water content that is above 70%, because almost all vegetables are vegetables with a lot of soup.

3. Side dish

The highest fat content is in grandiose side dishes, while the highest protein content is in plongos. High levels of fat in the mouth of the payroll due to the basic ingredients of making payday payload is the binding fat in the intestine of pigs which is the main source of fat in pork. Plongos has the highest protein content because plongos are made from plongos which are high in protein content

4. Complete meal

The highest levels of fat and carbohydrates are found in Chinese Mours, while the highest levels of protein are in Be Pasih. High levels of carbohydrate in Chinese brew is due to being made from rice, Chinese brew is also added mikering which is a source of carbohydrate in the manufacturing process. Blayag be Pasih has high

protein content due to the addition of sufficient fish in its presentation as a side dish from Blayag.

5. Beverage

Carbohydrate content in Es Ancruk was detected the highest because it is the main component of Ancruk ice made from rice which is a source of carbohydrates and there is the addition of bananas which are also high in carbohydrate content

6. Sambal

Peanut sauce has a higher protein content than tuwung sauce, which is 23, 26%. This is because one of the components of batun tuwung sauce is fried anchovies mixed with other seasonings in raw conditions.

7. Average Energy and Protein Adequacy

Energy Adequacy Rate (AKE) is the amount of a person's food intake that is balanced with his expenditure in accordance with the composition and size of the body, the level of physical activity in a healthy state and able to carry out life's tasks economically in the long run (12). Humans need enough food for the growth and development of their bodies and keep up their good activities (13)

Carbohydrates have the main function to provide the body's energy needs. Carbohydrates as the cheapest energy source compared to other nutrients (fat and protein) and every 1 gram of carbohydrate produces 4 kcal (14). As an energy source, protein is equivalent to carbohydrates, producing 4 kcal for every 1 gram of protein. Fat is the most dense energy source, which produces 9 Kcal for every gram of fat, or 2.5 times more than the energy produced by carbohydrates and protein in the same amount (15). Energy sufficiency is the amount of energy that can be provided by one type of food to meet the average energy sufficiency for adults, which is 2100 kcal, while the protein adequacy figure is 57 grams per capita per day (12).

The highest average AKE and PPA are found in traditional side dishes, which is 11.63 kcal and 30.77 grams, meaning that every 100 grams of traditional side dishes can meet 11.63% of 2100 Kcal of energy sufficiency and 30.77% of 57 grams of protein adequacy.

Conclusions

Based on the results of the study it can be concluded:

1. In Buleleng Regency there are 6 types of traditional foods namely snacks, vegetables, beverage, side dishes, complete meals and chili sauce with a total of 93, but 40 traditional foods are analyzed.

2. Nutrient content in traditional food in Buleleng Regency, namely water content ranged from 11.62 to 93.43%, ash content ranged from 0.05-13.67%, fat content ranged from 0.18-228.32%, protein ranged from 0.33-223.26%, carbohydrates ranged between 1.58–74.01%, and the total energy ranges from 25.21 - 386.40 kcal.

3. Energy Adequacy Figures and Protein Adequacy Figures The highest average is found in traditional side dishes of 11.63 Kcal and 30.77 grams, meaning that every 100 grams of traditional side dishes can meet 11.63% of the 2100 kcal of energy adequacy and 30.77% of 57 grams of protein adequacy.

Acknowledgment: The authors thank the Director of Poltekkes Kemenkes Denpasar for the funds provided and traditional food traders in Buleleng Regency for their support in providing research samples

Conflict of Interest: The authors declare that they have no competing interests.

Ethical approval: The study was approved by the Institutional (Poltekkes Kemenkes Denpasar) Ethics Commite.

Research Funding: This research was funded by the Health Polytechnic of Denpasar.

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