NUTRITIONAL ANALYSIS OF PROCESSED SNACK VEGETABLES AS POTENTIAL REGIONAL FERNS

WiwikI ndrayeni[1], EziAngraini[2] &WirnelisSyarif[3]
1 JurusanIlmuKesejahteraanKeluarga, FakultasPariwisata dan Perhotelan
Universitas Negeri Padang
Padang, 25176, Indonesia
Email: wiwik.indrayeni@fpp.unp.ac.id

Abstract

Based on preliminary observations, fern is a plant that has mucus, contains a lot of liquid and is easily blackened. Therefore all this time, fern vegetables cannot be processed with various kinds of preparations. Vegetable fern can only be processed for clear vegetables and rendang only by the community, while vegetable ferns are often found in areas in Indonesia, especially in West Sumatra.Based on these observations, several snacks made from vegetable ferns were accepted and liked by the community, as well as souvenirs from various regions producing ferns. The purpose of this study is to vary the variety of processed snacks from vegetable ferns and see the level of community preference for snacking on vegetable ferns. In this study a nutritional analysis was done through a proximate test to see the nutritional content (Carbohydrates, Protein, Water and Fat) in the products produced. The expected results in this study are the products produced have good nutritional value and are suitable for public consumption

Keywords: Analysis, Nutrition, Ferns, Snack

INTRODUCTION

Indonesia is an agricultural country because most of its population has a livelihood in agriculture or farming. As an agrarian country, Indonesia produces a variety of export agricultural commodities, including rice, soybeans, corn, various chillies, vegetables, tubers, and cassava. Many problems arise, such as a limited discussion of agriculture, the price of various food conflicts that are erratic or volatile, to the irresponsible elements in the food distribution chain. One of the main factors of agricultural products is mostly perishable and not durable, one of which is fern.

Fern plants are one of the plants that are found in Indonesia. Fern plants are found in many tropical forests that grow on a humid forest base. Almost all regions in Indonesia spread ferns, ranging from coastal areas, lowlands, swamps, rice fields, gardens to mountainous regions. Ferns are not specifically cultivated and are endemic forest vegetable plants, which grow wild without human intervention. Fern leaves are also believed to be efficacious for healing wounds. fern contains high vitamin C. The function of vitamin C is related to the formation of collagen in the body. Based on research, vegetable fern has a high phenol compound that is 61.56mg / 100 gr, and is a high source of antioxidants. Fern plants quoted from avrdc.org, contain a lot of fiber and nutrients such as, antioxidants, anti-inflammatory, fiber (fiber), rich in micronutrient nutrients, beta carotene, folic acid, minerals (Ca, Fe, and P). Good source

of calcium, phosphorus, iron and vitamin B. Prevents cardiovascular disease, rich in vitamin A, a source of macronutrients, even omega 3 which is usually found in fish.

Currently ferns are consumed by the community as vegetables and are often processed into rendang by some people. In the culinary archipelago, vegetable fern is quite prominent in its use in several areas. The Minangkabau people, for example, are famous for their tasty curry fries and delicious rendang. Even in the Pasaman area, rendang pakis is a mandatory menu in any special event. To increase and increase the potential of vegetable fern researchers used vegetable ferns to make processed fern snacks. Snack fern aims to increase the sale value, use fern, and increase the shelf life of ferns as food preparations. Therefore it is necessary to develop various preparations of vegetable ferns as a regional potential and can be consumed by the community and increase the selling value of fern vegetables. Based on the above background, the researcher is interested in conducting research on Processed Analysis of Fern Vegetables as a Regional Potential.

Indonesian people generally consume fern leaves as a vegetable material. Some characteristics of ferns or nails that can be processed into vegetables are young leaves and stems, fat stems and stems that are not easily broken (Astawan 2010). Currently ferns are consumed by the community as vegetables and are often processed into rendang by some people. In the culinary archipelago, vegetable fern is quite prominent in its use in several areas. The Minangkabau people, for example, are famous for their tasty curry fries and delicious rendang. Even in the Pasaman area, rendang pakis is a mandatory menu in any special event. To increase and increase the potential of vegetable fern researchers used vegetable ferns to make processed fern snacks. Snack fern aims to increase the sale value, use fern, and increase the shelf life of ferns as food preparations. Therefore it is necessary to develop a variety of processed snacks from vegetable ferns as a regional potential and can be consumed by the community and increase the selling value of fern vegetables. Based on the background above, the researchers are interested in conducting research on the Analysis of Processed Snack from Vegetable Ferns as a Regional Potential.

Method

This type of research is an experiment by conducting experiments in workshops on making crispy ferns and shredded ferns then proximate tests are carried out to determine the nutritional content of processed ferns by looking at water content, ash content, fat content, protein content and carbohydrate content. The object of research is crispy fern and shredded fern.

To measure water content as an aluminum cup that will be used to measure the weight of a sample that has been roasted, then weighed with an analytical balance and recorded value (c). The cup is stored in a desiccator before it is used so that it does not absorb moisture from the air which causes it to gain weight. 1-2 grams of sample are weighed in a prepared cup. The sample weights read on the analytical balance are recorded and then called the sample wet weight (a). The sample and the cup were dried in an oven for 3 hours at 105oC, then cooled in a desiccator and weighed. The weight obtained is then called the sample dry weight + cup (b). Calculation of water content can be done using the equation:

$$\text{water content}(\% \text{ bb}) = \frac{a - (b - c)}{(a)} \times 100$$

water content (% bk) = a − (b − c) x 100

a.   (b − c)

For the measurement of ash content as a porcelain cup is heated first in the furnace, then cooled in a desiccator and weighed. A total of 3-5 grams of sample in a porcelain cup is burned to the point of no-smoking and grayed in a furnace at 600oC until it is white. Then cooled in a desiccator and weighed.

Calculation of ash content can be calculated by the equation:

Ash Levels(% bb) = $\frac{W1 − W2}{W}$ x 100%

Information :

% bb   = ash content per wet material(%)

W   = the weight of the starting material before it is grayed(gr)

W1   = sample weights+ empty cup after ash(gr)

W2   = empty cup weight(gr)

Measurement of fat content is taken as much as 5 grams in the form of extract wrapped in filter paper and then the filter paper is put into a soxhlet extraction tool. condenser apparatus is placed on top of it and fat flask is placed underneath. The hexane solvent is put into the Soxhlet extractor until the sample is submerged. Then reflux is performed for a minimum of 6 hours until the solvent drops back into the clear fat pumpkin. The solvent in the fat flask is distilled and the solvent is recovered. Then the fat flask containing extracted fat is heated in an oven at150^{o}Cuntil reaching a constant weight, then cooled in a desiccator. Then the pumpkin and the fat inside is weighed and the weight of the fat can be determined. Calculation of fat content can be seen in the following equation:

fat level(% bb) = $\frac{W1 − W2}{W}$ x 100%

Information:

% bb= Fat content per wet material(%)

W   = Sample weight(gr)

W1   = Heavy pumpkin fat+ extracted fat(gr)

W2   = Tight empty pumpkin fat(gr)

At the protein content the sample was weighed as much0.2 Gris put into the Kjehdal flask, then added1.9±0.1 gr K_2SO_4, 40±10 mg HgO, dan 2.0 ± 0.1 ml H_2SO_4. Then the sample is destructed until the liquid is clear (about 1 hour).This clear solution is then transferred to the distillation apparatus. Kjehdal Pumpkin is washed with distilled water and then cucican water is added to the distillation apparatus added8-10 ml solution $NaOH-Na_2S_2O_3$. Under the condenser is placed the erlenmeyer that contains5 ml solution H_3BO_3 dan 2-4 indicator drops (mix 2 red metal parts0.2% in alcohol and 1 blue metal part0.2% dalamalkohol). The end of the condenser tube must be submerged in solutionH_3BO_3. Then fill the erlenmeyer diluted to 50 ml then titrate withHCl 0.02 N until the color changes to gray.The same procedure is also carried out on blanks.

Calculation of% N and protein content of the sample can be done using the equation below:

% N = (ml HCl – ml HCl blanko) x N HCl x 14.007   x 100 %
_____

mg sample
Levels protein (% bb) = % N x conversion factor(6.38)
Informastion :
% bb   = Protein content per wet material(%)
% N   = Nitrogen content in the sample(%)

Result and Discussion

Proximate analysis results show that preparations from fern vegetables have high levels of carbohydrate. The results of the proximate abon fern test are presented in the following table:

Table 1   Abon Pakis Nutrition Content

Nutrient content	%
Levels protein %	2,6575
LevelsFat %	6,6770
Levels Water %	22,6226
Levels Ash %	7,2067
LevelsCarbohidrat %	61.57

Table 2   Nutritional Content of Krispi Ferns

Nutrient content	%
Levels protein %	1,4000
Levels Fat %	33,4537
Levels Water %	7,4445
Levels Ash %	3,8183
Levels Carbohidrat %	53.70

The results of the research conducted it was seen that the highest levels were fat levels of 33.45% and carbohydrate levels of 53,%. Protein is an important food for the human body because it functions as a fuel in the body and also as a building material and regulator. While carbohydrates are the main calories and some classes of carbohydrates produce fiber that is useful for digestion, and has an important role in determining the characteristics of food ingredients

Conclusion

ConclusionIt was concluded that preparations from vegetable ferns have nutritional contents that are useful for the human body. The content contained in processed fern vegetables are:

1. Abon Pakis has 2.66% protein content, 6.68 fat content, 22.60 moisture content, 7.20% ash content and 61.57% carbohydrate content.

2. Pakis Krispimemilikikadar protein 1,40 %, kadar lemak 33,45%, kadar air 7,62 %, kadarabu 3,82 % dan kadarkarbohidrat 61,57%.

The results of this study will be an illustration for other researchers and it is hoped that other researchers can make a variety of preparations from vegetable ferns so that the utilization of fern vegetables is higher.

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