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Nutritional Content Of Crispy Egg Sugar Cane (*Saccharum edule*)

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ABSTRACT

Egg sugarcane plants, also known as terubuk or wax vegetables, are a type of flowering vegetable. In Sanggau Regency, egg sugarcane is only processed as a vegetable. Therefore, it is necessary to innovate processed healthy and nutrient-rich snack options with relatively easy processing, one of which is sugarcane crispy eggs. To determine the nutritional content of processed crispy egg sugarcane snacks, a proxy analysis was conducted to determine the nutritional value of sugarcane crispy eggs. The purpose of this study was to analyze the nutritional value of crispy egg sugarcane. The method used in this study had 3 treatment variations, and the tests carried out were proximate analysis, including moisture content tests, ash, protein, fat, and total carbohydrate. The results of the crispy egg sugarcane test showed the highest moisture content in the A3 treatment of 34.885% ± 0.85, the highest ash in the A1 treatment of 4.45% ± 0.77, the highest fat in the A2 treatment of 42.06% ± 6.55, the highest protein in the A3 treatment of 6.46% ± 3.63, and the highest carbohydrate in the A3 treatment of 29.48% ± 14.79. Based on the data of the proximate analysis that has been carried out, it can be concluded that crispy egg sugarcane can be one of the healthy snack options because of the high nutritional value content of this product.

Keywords: crispy egg sugarcane, proximate analysis

INTRODUCTION

The egg sugarcane plant (Figure 1), also called terubuk or wax vegetable, is a type of vegetable plant that can be found on the islands of Kalimantan and Java, as well as the eastern regions of Indonesia, such as Ambon, Sulawesi, and Papua. This plant is still cultivated vegetatively using stem cuttings because the egg cane flower cannot develop perfectly until it forms seeds (Chaniago 2015). This plant is a type of flowering vegetable that is used as a basic vegetable ingredient that can be eaten as a culinary dish or dish. In 100 g of terubuk vegetables, there are 4.3 g of protein, 2 mg of iron, 35 mg of vitamin C, 92.4% of water, and 25 mg of calcium, with a total energy of 120 kJ (Chaniago 2019). Egg sugarcane plants can be used as an important food source, as well as medicine by the inland Papuan tribes in helping to facilitate childbirth, natural contraceptives, and help facilitate menstruation. This plant is also used as feed for cattle, as well as for its ecological function in preventing soil erosion because it can hold the soil so that it does not easily landslide (Sidayat 2020).

In Sanggau Regency, egg sugarcane is generally used as processed vegetables, stir-fried vegetables, clear vegetables, a mixture of curry, and as a dish. The use of egg sugarcane as a processed nutritious snack has not yet been explored. Therefore, it is necessary to innovate processed egg sugarcane into a healthy and nutrient-rich snack option with relatively easy processing, such as processed sugarcane crisp eggs. To find out the nutritional content of the processed crispy egg sugarcane snacks produced so that it can be one of the snack options, it is necessary to carry out an analysis, namely a proxy analysis, including a test of moisture content, ash content, protein content, fat content, crude fiber content, and total carbohydrate content. The innovation of processed sugarcane crispy eggs was chosen because it follows the lifestyle of people who often consume snacks, utilizing the local potential in Sanggau, which is modified into healthy and nutritious snacks.

METHODS

Research Time and Place

This research was carried out for 4 months, from June to September 2025, at the Chemistry Laboratory and Sensory Test Laboratory in the D3 Plantation Product Management (PHP) Study Program of PSDKU Pontianak State Polytechnic in Sanggau Regency.

Making Crispy Egg Sugarcane

The procedure for making crispy egg sugarcane is as follows: the egg cane is cleaned from the skin, and the cleaned egg cane is then cut to a thickness of 2 cm. The cut egg cane is mixed with spices containing pepper, broth powder, coriander, and garlic, stirred until smooth, and marinated for 30 minutes. The egg cane

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was added to a flour dough consisting of wheat flour, rice flour, tapioca baking soda flour, powdered broth, and salt, and stirred until evenly distributed. The marinated egg cane is then placed in the flour mixture. Tap it to form a curly layer. The egg cane is then fried over medium heat until golden yellow for 10 minutes.

Chemical Properties Testing

The proximate analysis was carried out in accordance with SNI 01-2891-1992. Moisture content was tested using the thermogravimetric method, dry/direct ash content testing, protein content was tested using the semimicro Kjeldahl method, fat content was tested using Soxhlet extraction, and carbohydrate content was tested using different methods.

Data Analysis Methods

The data analysis method used in this study was a Complete Random Design (RAL), using a variety of treatments on rice flour, namely A1 10 g, A2 20 g, and A3 30 g. The results are presented in Table 1.

RESULTS AND DISCUSSION

Proximate Test Results

The crispy egg sugarcane treatments A1, A2, and A3 are shown in Figure 2. The results of the proximate analysis are presented in Table 2. In Table 2, the highest moisture content in the A3 treatment was 34.88%, with a standard error of 0.85. This is because the A3 treatment had the highest addition of rice flour (30 g). According to Safrika *et al.* (2024), rice flour contains starch that can absorb and bind water during mixing and heating. This is also in line with Nopriyanti *et al.* (2022), who stated that rice flour has starchy properties similar to water; therefore, with an increase in the concentration of rice flour, the moisture content in a product increases.

The highest ash content was found in the A1 treatment, which was 4.45% with a standard error of 0.77. According to Nuraisyah *et al.* (2018), ash content affects product quality. The ash content comes from minerals in a material, to determine the type of material used, and to determine the nutritional value of food. Rice flour has an ash content of 0.34% (Mumtazah *et al.* 2021), which then with the addition of other ingredients, also increases the ash content in crispy egg sugarcane products. According to Ningsih *et al.* (2019), the high ash content of a food product indicates a high mineral content consisting of sodium, calcium, potassium, and silicate compounds. The ash content is also not always equivalent to the material because some minerals are lost during volatilization.

Fat in a product adds calories and improves the texture and taste of food (Ningsih *et al.* 2019). In the tests carried out, the highest fat content was obtained in A2 treatment, which was 42.06% with a standard error of 6.55. The high fat content in this product is due to the addition of raw materials, namely, egg

Figure 1 Egg sugarcane.

Table 1 Formulation of crispy egg sugarcane treatment

Ingredients	Treatments		
	A1	A2	A3
Egg Sugarcane (kg)	1	1	1
Flour (kg)	1	1	1
Tapioca Flour (gr)	200	200	200
Rice Flour (gr)	**10**	**20**	**30**
Table Salt (gr)	30	30	30
Broth Powder (gr)	50	50	50
Pepper Powder (gr)	4	4	4
Coriander Powder (gr)	5	5	5
Garlic Powder (gr)	25	25	25
Baking Soda (gr)	5	5	5

Figure 2 Crispy egg sugarcane treatments.

Table 2 Proximate analysis results on crispy egg sugarcane

Sample	Test parameters				
	Moisture (%)	Ash (%)	Fat (%)	Protein (%)	Carbohydrate (%)
A1	23,51 ± 0,46	4,45 ± 0,77	37,25 ± 3,25	6,38 ± 1,52	28,41 ± 2,03
A2	23,16 ± 1,08	4,09 ± 0,18	42,06 ± 6,55	3,88 ± 2,63	26,81 ± 6,79
A3	34,88 ± 0,85	3,34 ± 0,29	25,84 ± 16,43	6,46 ± 3,63	29,48 ± 14,79

Note: A1 = Treatment 1; A2 = Treatment 2; and A3 = Treatment 3

sugarcane, which has a fat content of 1.44% Pentury *et al.* (2017), and the addition of other ingredients. In addition, the frying process in the manufacture of crispy egg sugarcane causes oil to be absorbed into the product, which increases the fat content in the final product (Dewi *et al.* 2017).

Proteins are a source of energy that play an important role in regulating and building substances in the body that are absorbed as amino acids (Jamilah *et al.* 2024). The results of the crispy egg sugarcane test showed the highest protein content in the A3 treatment, which was 6.46% with a standard error of 3.63. According to Pentury *et al.* (2017), the protein content of sugarcane eggs is 4.4%. Therefore, the addition of additional ingredients in the manufacture of crispy egg sugarcane can increase the high protein content in crispy egg sugarcane. One of the reasons for this is the high use of rice flour compared to other treatments. Rice flour is one of the basic ingredients in the manufacture of food products consisting of carbohydrates, fats, proteins, minerals and vitamins. Each 100 g of rice flour contained 13.74% protein (Afgani *et al.* 2023).

Carbohydrate analysis is carried out using different methods, so the value obtained depends on the amount of other components in the sugar cane crisp egg. According to Diana & Anggreini (2023), the carbohydrate content increases with the addition of rice flour. The higher the amount of flour added, the higher the carbohydrate content. This is in line with research that has been conducted on crispy egg sugarcane, which obtained the highest carbohydrate value in the A3 treatment, with the highest amount of rice flour, with a carbohydrate content of 29.48% with a standard error of 14.79.

CONCLUSION

The crispy egg sugarcane has the highest moisture content (34.88 %), ash content (4.45 %), fat content (42.06 %), protein content (6.46 %), and carbohydrate content (29.48 %).

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