

SALACCA COFFEE MADE OF SNAKE FRUIT SEED WASTE FROM PARADISE ISLAND

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1. Introduction

Prices of snake fruits at harvest time in Sibetan village, Karangasem regency, Bali has decreased dramatically. This situation results in many wasted snake fruits and some farmers have been able to process it, such as become dodol (a type of sweet candy made of rice flour and palm sugar), sweets and wine. Snake fruits (*Salacca zalacca*) or waste from the process itself and unprocessed fruits produces a seed that has not been used [1]. Such kind of problem certainly experienced by farmers in other snake fruits plantation. Therefore, snake fruit seeds waste need to be processed into valuable economical products and beneficial to health. Based on this, the study aims to process snake fruit seed waste into coffee products.

2. Problem Statement

Snake fruit seed waste becomes a problem for farmers because it can not be processed into valuable product, therefore solutions to overcome this problem is necessary.

3. The purpose of the investigation

This study aims at processing snake fruit seeds into valuable products to become Salacca coffee.

4. Research Method

This research was conducted by processing the seeds into the coffee and to know the use value by analyzing the chemical content and sensory organoleptic test. The seeds processing in this study was conducted through five processes, namely washing seeds, cutting, drying, roasting, grinding and filtering, in order to obtain powdered salacca coffee. The process is described as follows.

- (1) Washing is done by cleaning the dirt attached to the seeds using water and repeated 2 times.
- (2) The seeds then cut into smaller sizes using a knife.
- (3) The seeds then dried in the sun for 5 days.
- (4) 1 kg of the dried seeds then roasted. This process is carried out for 15 minutes at a temperature range of 180°C - 200°C. Stirring was done while roasting.
- (5) The samples were roasted and then ground and filtered in order to obtain a coffee powder. Coffee powder was then scaled.

The process of making salacca coffee from snake fruit seeds repeated 3 times to obtain representative data. Tests of chemical constituents to find out the

benefits of the products was done in Laboratory Services Unit of Agricultural Technology Faculty of Udayana University. The process of making coffee has been done at Abian Salak, Sibetan Village. Organoleptic test has been conducted to 30 respondents of coffee lovers to provide assessment questionnaire about coffee quality in terms of taste and odor through rank test (1 : very dislike, 2 : dislike, 3 : usual, 4 : like, 5 : very like). Organoleptic test was conducted on Salacca coffee, civet or "Luwak" coffee, and Bali coffee.

5. Results and Analysis

Snake fruits seeds waste as much as 1 kg of dried seeds processing yield 0.825 of powdered coffee. This means there is a weight loss of 17.5%. This loss occurs because of the evaporation process substances in the roasting process. Cutting of the seeds aims at expanding the touchpad's surface irradiation with sunlight, so the drying process becomes faster. Drying was done to reduce the water content in the seeds, therefore Salacca coffee has a low water content. The water content in the coffee powder is expected to be low to avoid the growth of microorganisms. In addition, the low water levels will facilitate and accelerate the filtering process.

Roasting process is a hallmark of any kind coffee making since the process that gives flavor, color, and odor of the coffee itself. Roasting process is carried out at a temperature of 180°C - 200°C, because this temperatures provides good quality of coffee production [2]. Roasting is the key of the coffee production process. This process is the formation stage of the odor and taste of coffee from the seeds. The results of this roaster also facilitate the grind in order to obtain a finer powder and easily made in the form of infusion solutions. During the roasting process, there are three stages of physical and chemical reactions that run sequentially, ie the evaporation of water from the seeds, the evaporation of volatile compounds, as well as pyrolysis or browning seeds. Roasted process begins with the evaporation of water contained in the seeds by utilizing the available heat, followed by pyrolysis reaction and Maillard reaction also occurs. These reactions cause the aroma of the coffee [3]. Pyrolysis is basically a decomposition reaction of hydrocarbon compounds such as carbohydrates, hemicellulose, and cellulose in the seeds resulting from the heating. The reaction generally occurs after the temperature is above 180°C. Physically characterized by discoloration of the seeds into blackish brown color.

During the process of roasting seeds undergo physical and chemical changes that cause significant weight loss. Losing weight or yield is a weight ratio before and after roasting (%). In this study produced 82.5 % of coffee yield. After the roasting process, the grinding process is carried out using a grinder, and sifted so that the results obtained are finely ground coffee.

(1) Chemical Analysis

Table 1. Chemical Analysis of Salacca Coffee

No	Analysis	Unit	Amount
1	Water	%	6.24
2	Ash	%	3.49
3	Fat	%	2.95
4	Protein	%	6.34
5	Carbohidrate	%	80.98
6	Antioxidant	mg/L GAEAC	436.91
7	Caffeine	%bb	0.207
8	Phenol	mg/100g GAE	443.29
9	Flavonoid	mg/100g QE	66.4
10	Tannin	mg/100g TAE	838.98

Based on Table 1, the water content in Salacca coffee is in SNI standard of the quality of powdered coffee, as well as the ash content. The caffeine content in Salacca coffee is low. This is compared with SNI requirements regarding the quality of coffee powder which does not exceed 2%. This low caffeine content will certainly reduce the impact of excessive caffeine consumption from regular coffee. This is because the consumption of caffeine per day for adults has its own limit [5]. In addition, the content of antioxidants in Salacca coffee is too high. The content of these antioxidants such as tannins, flavonoids, phenolic compounds will be beneficial to health [6].

(2) Organoleptic Sensory evaluation

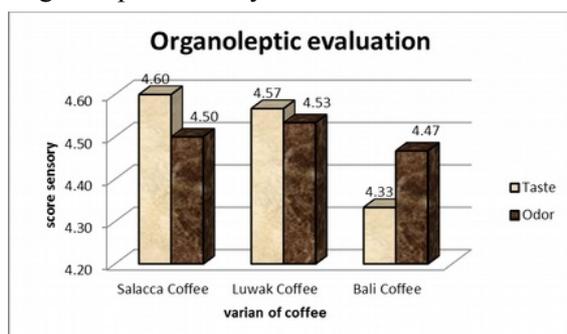


Figure 1. Sensory evaluation of taste and odor of Coffee

Based on Figure 1, salacca coffee has taste and odor that is almost the same as civet “Luwak” coffee, and the coffee is somewhat different to Bali coffee. This indicates that respondents coffee lovers feel the taste and odor which is almost the same between salacca coffee and civet coffee. This means snake fruit seed waste that has been processed into salacca coffee has a use value and have content that is also beneficial to health, such as with low caffeine and rich in antioxidants.

6. Conclusion

Snake fruit seed waste can be processed to make coffee. The resulting coffee has lower caffeine content and are rich in antioxidants. From the organoleptic test, odor and taste of the coffee is similar to civet “Luwak” coffee. Therefore, unprocessed snake fruit seed waste can be processed into valuable salacca coffee.

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