journal homepage: https://ojs3.unpatti.ac.id/index.php/biopendix

B I O P E N D I X P-ISSN: 2407-4969
Volume 12, Number 2, October 2025 E-ISSN:2684-8341
Pages: 110-115 DOI: https://doi.org/10.30598/biopendixvol12issue2page110-115

Organoleptic Test and Analysis of Vitamin C Content of Red Snake Fruit Jelly (*Salacca edulis* Reinw)

Alwi Smith[1*], Ritha Karuwal[2], Kristin Sangur, Eifan Boyke Pattiasina[3], Rufiati Simal[4]

[1,2,3]Biology Education Study Program, Faculty of Teacher Training and Education, Pattimura University, Ambon, Indonesia
*email: asmith.unpatti@gmail.com
[4]Elementary School Teacher Study Program PSDKU Aru Islands, Faculty of Teacher Training and Education, Dobo, Indonesia

Submitted: January 11, 2025; Revised: June 9, 2025; Accepted: August 18, 2025; Published: October 31, 2025

Abstract. In Maluku, the salak center is on Ambon Island, namely Soya, Hatalai, Wakal, Amahusu, and Hative Besar Villages, and also on Seram Island, namely Piru, Taniwel, Riring Villages. Salak in West Seram Regency is one of the native salak cultivars of Maluku. This is because this cultivar has a red fruit appearance and a sweet and sour taste. Organoleptic of red snake fruit jelly candy on the color parameter the highest value on a scale of 4 with a total of 11 panelists, who really like the brownish red color with an average of (3.92), the taste parameter the highest value on a scale of 4 with as many as 16 panelists who like the sweet taste typical of red snake fruit with an average of (4.00), the aroma parameter the highest value on a scale of 4 as many as 10 panelists who like the fragrant aroma typical of red snake fruit, with an average of (3.60), the texture parameter the highest value on a scale of 5 as many as 12 panelists who like a very soft and chewy texture, with an average of (4.12) and the average vitamin C content in red snake fruit jelly candy is 4.58 mg/100g.

Keywords: Organoleptic; Vitamin C; Snake Fruit Jelly

How to cite this article:
Smith, A., Karuwal, R., Sangur, K., Pattiasina, E. B., & Simal, R. (2025). Organoleptic Test and Analysis of Vitamin C Content of Red Snake Fruit Jelly (Salacca edulis Reinw). BIOPENDIX: Jurnal Biologi, Pendidikan Dan Terapan, 12(2), 110-115. https://doi.org/10.30598/biopendixvol12issue2page110-115

Journal homepage: https://ojs3.unpatti.ac.id/index.php/biopendix
Journal e-mail: jbiopendix@gmail.com
Research Article: Open Access

INTRODUCTION

Indonesia is a country that is suitable for growing salak plants with a good climate, this allows the types of plants and fruits to continue to grow and develop well (Asrina & Fadilah, 2021). In Maluku, the salak center is on Ambon Island, namely Soya, Hatalai, Wakal, Amahusu, and Hative Besar Villages, and also on Seram Island, namely Piru, Taniwel, Riring Villages. Salak in West Seram Regency is one of the native salak cultivars of Maluku. This is because this cultivar has a red fruit appearance and a sweet and sour taste (Elly et al., 2018).

Stated that Riring village is a plateau with an altitude of 660 m above sea level, pH 7, air humidity 80%, air temperature 19˚C, and light intensity 1000 cd. Altitude is included in the physiographic factors, greatly affecting climate, rainfall and air temperature. Salak fruit (*Salacca edulis* Reinw) is one of the profitable commodities to develop. Salak fruit can be planted in intercropping with other plants, and the harvesting process can also be carried out throughout the year because its productive age is relatively long (Smith et al., 2023).

According to (Smith et al., 2023), among all the vitamin levels in snake fruit, vitamin C is quite high. According to (Tantrayana & Zubaidah, 2015) that Balinese snake fruit jelly candy has vitamin C as much as (4.84 mg/100 g). However, there has been no study on jelly candy made from red snake fruit. On the other hand, candy has composition, content and quality. The quality of good jelly candy must comply with the quality requirements of the Indonesian National Standard, and public responses or responses. This candy needs to be tested organoleptically including taste, aroma, texture, color using the preference test method (Rahayu, 2020).

MATERIALS AND METHODS

Research Type

The type of research that will be conducted is quantitative descriptive. This quantitative descriptive research is used to describe organic and vitamin C levels.

Research Place

Making red snake fruit jelly

The making of red snake fruit jelly candy was carried out in the Basic Biology Laboratory of the Faculty of Teacher Training and Education, Pattimura University, Ambon. This research was carried out for 7 days.

Organoleptic Test

Organoleptic testing was carried out at the Basic Biology Laboratory of the Faculty of Teacher Training and Education, Pattimura University, Ambon, this research was conducted for 1 day.

Vitamin C Testing

Vitamin C testing was carried out at the Testing Laboratory of the Ambon Industrial Standardization and Service Center, this research was carried out for 7 days.

Procedures

Procedure for making jelly

The procedure for making red snake fruit jelly candy was modified using the method of (Apriani et al., 2019).

1. Peel 15 red snake fruit, cut into pieces, wash with clean water
2. Blend the salak until smooth.
3. Prepare a pan, add 1 L of water, clear wallet agar-agar (2 packs) and 1 pack of nutrijel. Cook at a temperature of 60-70˚C, for 10 minutes.
4. Add 250 grams of granulated sugar, stir until dissolved over medium heat for 5 minutes..
5. Add the mashed salak, stir evenly until boiling.
6. After boiling, turn off the stove.
7. Pour into molds, leave to cool at room temperature for 10 hours.
8. After it has cooled, cut it into pieces and then dry it in the oven at 60˚C for 12 hours.
9. Labeled
10. The candy that has been packaged is then stored at room temperature and refrigerator temperature.

Organoleptic test

Organoleptic tests were conducted by at least 25 panelists with the parameters tested, namely taste, color, aroma, and texture which aimed to determine the panelist's response to the product properties presented in the form of a questionnaire. Each panelist was asked to provide an assessment of one of the criteria in Table 1.

Table 1. Scores and Descriptions for Each Organoleptic Parameter of Jelly

Characteristics	Rating Scale	Score
Color	Very reddish brown	5
	Brownish red	4
	Reddish brown	3
	Pale red	2
	Not red	1
Aroma	Very fragrant, typical of red salak fruit	5
	The distinctive aroma of red snake fruit	4
	Slightly fragrant, typical of red salak fruit	3
	It doesn't have the typical aroma of red salak fruit	2
	It doesn't have the distinctive aroma of red snake fruit.	1
Flavor	Very sweet, typical of red snake fruit jelly	5
	Sweet, typical red snake fruit jelly candy	4
	Slightly sweet, typical of red snake fruit jelly	3
	Not sweet red snake fruit jelly candy	2
	Not very sweet, typical of red snake fruit jelly	1
Texture	Very soft and chewy	5
	Soft and chewy	4

A bit soft and chewy	3
Not soft and chewy	2
Very not soft and chewy	1

Vitamin C analysis

1. Vitamin C analysis using the iodine titration method with the (Jacobs) method.
2. The jelly candy is unwrapped and then ground with a mortar and pestle until a slurry is obtained.
3. Weigh 10-30g of slurry, put it into a 100 ml measuring flask, add distilled water and stir until evenly mixed.
4. Then filtered with a Gooch crucible (centrifuge) to separate the filtrate.
5. Take 5-25 ml of filtrate with a pipette and put it in a 125 ml Erlenmeyer.
6. Add 2 ml of 1% starch solution and add 20 ml of distilled water if necessary.
7. Then titrate with 0.01 N containing 16 g KI per liter.
8. Vitamin C Level Formula (Rahayu Fitriana & Khanifah, 2020)
9. Vitamin C levels = $\frac{VxNx88,06xfp}{massa\ contoh\ (gram)}$ x 100

Information:

V : Iodine titration volume (ml)

N : Standardized iodine normality

88.06: gram equivalent of vitamin C

Fp : diluent factor (aquades)

Berat sampel: gram

Satuan : mg/g

Data analysis

The data obtained in this study will be analyzed using descriptive statistics.

RESULTS AND DISCUSSION

Organoleptic Test

The results of the research on organoleptic tests on red snake fruit jelly candy can be seen in Table 2.

Table 2. Average Results of Panelist Frequency in Organoleptic Test of Jelly

Parameter	Texture					Frequency Scale	Average
	1	2	3	4	5		
	Frequency						
Color	0	2	5	11	7	98	3,92
Aroma	0	3	8	10	4	90	3,60
Flavor	0	1	3	16	5	100	4,00
Texture	0	1	7	5	12	103	4,12

Table 2. shows that the highest scale value on the color parameter is scale 4 with a frequency of 11 panelists, with an average of 3.92. On the other hand, the highest scale value on the aroma parameter is 4 with a total of 10 panelists, with an average of 3.60. In addition, on the taste parameter, the highest scale value is 4 with a total of 16 panelists, with an average of 4.00. On the texture parameter, the highest scale value is on a scale of 5 with a total frequency of 12 panelists, with an average of 4.12.

Color is one of the sensory properties of food products that is a determining factor in quality because the color produced by a food product can affect whether or not it is suitable for consumption by consumers. The organoleptic value of color is close to 4, which means that the ideal color of jelly candy is reddish brown. This is almost in line with (Pangalila et al., 2021) who stated that the color of fruit jelly candy produced generally has the same color, namely red. The presence of red is determined by the natural color of fruit juice and during the cooking process. The longer it is cooked, the color changes to brown.

This is evident in the process of making red snake fruit jelly candy using a temperature of 60-70˚C for 10 minutes, making the color of the jelly candy browner. (Harijono et al., 2001) also stated that color is more determined by the natural color of the fruit juice and the browning results during the process. (Nuh et al., 2020) stated that the average organoleptic value of the color of jackfruit juice jelly candy was 3.95. This is not much different from this study which has an average organoleptic value of the color parameter of 3.92.

On the other hand, color changes are also caused by the use of sugar. In making jelly candy, 100 g of sugar is used (Mayasari et al., 2020). The difference in the dose of sugar used in making red snake fruit jelly candy is due to the astringent taste of the red snake fruit before it is processed.

In addition to color, the success of a food product is greatly influenced by the taste factor because taste is the main factor in the consumer's final decision to accept or reject food. (Ahmad et al., 2019) stated that even though other parameters of a product are very good, if the taste is not satisfactory, the product will be rejected by consumers.

Aroma is one of the parameters in testing sensory properties (organoleptic) using the sense of smell. Aroma can be accepted if the material produced has a specific aroma. In this study, the organoleptic aroma parameter had an average value of 3.60 which indicates the distinctive aroma of red snake fruit. When compared with the research of (Rosida et al., 2019) found that the organoleptic value of color in Salak Sanase Bangkala Madura jelly candy was 4.76. The high organoleptic value of the aroma parameter is determined by the use of gelatin which can cause foreign aromas in jelly candy if the concentration is excessive. The difference in the decrease in the average value of aroma in this study was due to the use of nutrijel and wallet agar-agar. Nutrijel and agar-agar are vegetable gelatins. These ingredients affect the aroma of jelly candy, the average value of the aroma of red snake fruit jelly candy is lower

In this study, the organoleptic taste parameter has an average value of 4 which indicates the typical sweet taste of red snake fruit which also means that the red snake fruit jelly candy is accepted by the panelists. When compared with the study conducted by (Wulandari et al., 2016) the average value of the taste of Bangkok snake fruit jelly candy is 3.43. This is due to the amount of sugar used and the drying process. In this study, drying at a temperature of 60˚C for 12 hours affects the taste of red snake fruit jelly candy to become the typical sweet taste of red snake fruit. This is in line with the results of the study by (Wulandari et al., 2016) which revealed that the taste produced in candy with a drying temperature of 40˚C produces a candy taste that is so sour because the water content in the candy is still in large quantities so that the concentration of the substance is still thin and the sour taste in the snake fruit is still high, while in candy with a temperature of 50˚C produces a sweet taste in the candy because the water content is getting less.

This is supported by (Sari et al., 2016), sugar solution in osmotic dehydration causes solute diffusion from the solution into the food material and water diffusion out of the material into the solution. Sugar diffusivity is lower than water diffusivity. This is utilized to obtain the desired results from food materials that are dehydrated by osmosis, namely by regulating the amount of water that comes out with the amount of sugar that enters. The slow process in osmotic dehydration will result in a balance of sugar and water levels in food materials.

Texture is one of the quality components that affects a food. The texture parameters of a food are determined by the interaction between the ingredients used (Setiawati et al., 2023). Texture can be felt when stirring or consuming the food. The average organoleptic value of the red snake fruit jelly candy texture parameter is 4.12, which means the ideal texture is very soft and chewy. This texture is due to the use of one pack of nutrijel and one pack of wallet agar-agat. This is supported by (Wulandari et al., 2016) who stated that the higher the concentration of agar-agar added, the chewier and more preferred the texture of the Bongkok Snake Fruit candy. This is because the nature of agar-agar likes water so that the more water it will produce a soft candy product with a soft and chewy texture.

The average value of the red snake fruit jelly candy texture parameters is higher compared to the research conducted by (Wulandari et al., 2016) from three agar concentration treatments, the highest agar concentration treatment value was 3%, the average organoleptic value of the Bangkok snake fruit jelly candy texture was only 3.33.

Vitamin C levels

The results of the study on vitamin C levels in red snake fruit jelly candy can be seen in Table 3.

Table 3. Results of Vitamin C Content of Red Salak Jelly

Sample code	Vitamin C content (%)
Deuteronomy 1	0,0458
Deuteronomy 2	0,0458
Average	0,0458

Table 3 shows that the average value of vitamin C content of red snake fruit jelly candy is 4.58 mg/1. The vitamin C content in red snake fruit jelly candy products is lower than the vitamin C content of Bali snake fruit which has 4.84 mg/100 g. (Dewi and Lestari, 2017) stated that vitamin C has properties that are easily damaged when in contact with light and heating treatment. In this study, cooking was carried out at a temperature of 60-70˚ for 10 minutes. High temperatures and cooking times resulted in a decrease in vitamin C levels.

This is supported by (Fatmawati et al., 2022) who stated that the characteristics of vitamin C are easily soluble in water, therefore during the cooking process of food ingredients containing vitamin C, the amount of vitamin C will decrease. The vitamin C content in fruits and foods will be damaged due to the oxidation process by outside air, especially if heated. (Wastawati and Marwati, 2019), explained that high temperatures during drying increase oxidation reactions and thermal degradation, which damage C so that vitamin C levels decrease. In this study, the cooking and drying processes were carried out so that vitamin C could be reduced. At the drying stage, red snake fruit jelly candy was dried in an oven at a temperature of 60˚C for 12 hours. This results in accelerated degradation, thereby reducing the levels of vitamin C in jell.

CONCLUSION

Organoleptic of red snake fruit jelly candy on the color parameter the highest value on a scale of 4 with a total of 11 panelists, who really like the brownish red color with an average of (3.92), the taste parameter the highest value on a scale of 4 with as many as 16 panelists who like the sweet taste typical of red snake fruit with an average of (4.00), the aroma parameter the highest value on a scale of 4 as many as 10 panelists who like the fragrant aroma typical of red snake fruit, with an average of (3.60), the texture parameter the highest value on a scale of 5 as many as 12 panelists who like a very soft and chewy texture, with an average of (4.12) and the average vitamin C content in red snake fruit jelly candy is 4.58 mg/100g.

REFERENCES

Ahmad, L., Une, S., & Bait, Y. (2019). Karakteristik Komponen Gizi, Antioksidan,dan Respon Organoleptik Bubur Jagung Tradisional Gorontalo dengan Ekstrak Daun Kersen (*Muntingia calabura* L.). AgriTECH, 38(4), 463-468. http://doi.org/10.22146/agritech.24739

Apriani, Sri devi, Yohana K. D, and Oke A.L. (2019). Kajian formulasi agar-agar dan gula terhadap mutu permen jelly buah lakum (*Cayratia trifolia* (L.) Domin). Jurnal Sains Pertanian Equator 8(3). https://doi.org/10.26418/jspe.v8i3.34141

Asrina, J., dan Fadilah, R. (2021). Kualitas keripik salak (*Salacca zalacca*) pada berbagai variasi temperatur dan waktu selama penggorengan hampa udara. Jurnal Pendidikan Teknologi Pertanian, Vol. 7, No. 1, Hal. 67–78. https://doi.org/10.26858/jptp.v6i2.12434

Dewi, Y. S. K., & Lestari, O. A. (2017). Permen Jelly Kaya Nutrisi dari Alam

Elly, S. S., Watuguly, T. W., & Rumahlatu, D. (2018). Genetic diversity of *Salacca edulis* Reinw from west seram district, maluku, Indonesia based on morphological 29 characters and RAPD profiles. Biodiversitas, 19(5), 1777–1782. https://doi.org/10.13057/biodiv/d190526

Fatmawati, F., Halik, A., Sutanto, S., Laga, S., & Pance, Y. (2022). Studi Formula Permen Jelly Gelatin Dengan Buah Naga Merah Hylocereus polyrhizus L. *Jurnal Ilmiah Ecosystem*, *22*(2), 267-277. https://doi.org/10.35965/eco.v22i2.1522

Harijono, J. Kusnadi, and Setyo A. Mustikasari. (2001). Pengaruh kadar karaginan dan total padatan terlarut sari buah apel muda terhadap aspek kualitas permen jelly. *Jurnal Teknologi Pertanian*, 2(2) : 110-116.

Mayasari E, Rahayuni T, Erfiana N. (2020). Studi pembuatan permen jelly dari kombinasi nanas (*Ananas comosus* L.) dan jeruk sambal (*Citrus microcarpa*). Jurnal Ilmu dan Teknologi Pangan. 6:749-756. https://doi.org/10.29303/profood.v6i2.146

Nuh, M., Barus, W.B.J., Miranti., Yulanda, F., Pane, M.R., (2020). Study Pembuatan Permen jelly dari Sari Buah Nangka. *Jurnal Teknologi Hasil Pertanian* 9(1):193-198

Pangalila A. Grace., Erny J. N. Nurali., dan Jan R. Assa. (2021). Pengaruh Konsentrasi Gelatin Dan Sukrosa Terhadap Kualitas Fisik, Kimia Dan Sensoris Permen Jelly Tomat.

Rahayu Fitriana, I., &Khanifah, F. (2020). Analisis Kandungan Vitamin C Pada Buah Sawo (Achraszapota) Berdasarkan Lama Penyimpanan. In Jurnal Insan Cendekia Vol. 7(1).34-39

Rosida, Dedin Finatsiyatull, and Arum saka Arina Taqwa. (2019). Kajian pengembangan produk salak senase (*Salacca zalacca* (Gaert.) Voss) Bangkalan Madura sebagai permen jelly. Jurnal Agroteknologi 13.1: 65-74. https://doi.org/10.19184/j-agt.v13i01.10874

Sari, R. (2016). Pengaruh Konsentrasi Gula Dan Suhu Pengeringan Terhadap Karakteristik Jelly Instan Lidah Buaya Instan (Aloa Vera).

Setiawati, V. R., & Cendana, S. (2023). Chemical, physical and organoleptic quality test of seaweed (*Eucheuma cottonii*) jelly candy. Journal of Agritechnology and Food Processing, 3(1).23 33.https://doi.org/10.31764/jafp.v3i1.13554

Smith, Alwi, Sintje Liline, and Solagratia Sahetapy. (2023). Analisis Kadar Abu Pada Salak Merah (*Salacca edulis* Reinw) Di Desa Riring Dan Desa Buria Kecamatan Taniwel Kabupaten Seram Bagian Barat, Provinsi Maluku. biopendix: Jurnal Biologi, Pendidikan dan Terapan 10(1): 51 57. https://doi.org/10.30598/biopendixvol10issue1page51-57

Tantrayana, Putu .B, and Elok Z. (2015). Karakteristik Fisik- Kimia dari Ekstra Salak Gula Pasir dengan Metode Meserai. Jurnal Pangan dan Agroindustri 3(4).

Wastawati, W., & Marwati, M. (2019). Pengaruh suhu dan lama pengeringan terhadap sifat kimia dan sensoris manisan kering buah tomat (*Lycopersicum commune* L.). Journal of Tropical AgriFood, 1(1), 41-47. http://dx.doi.org/10.35941/jtaf.1.1.2019.2412.41-47

Wulandari, H. P., & Afrianti, L. H. (2016). Pengaruh Konsentrasi Sukrosa dan Konsentrasi Agar-agar Terhadap Karakteristik Permen Lunak Salak Bongkok (*Salacca edulis* Reinw Reinw).