



SUBSTITUTION OF DRAGON FRUIT SKIN AS HERBAL TEA TO PREVENT MORE NUTRITION (OBESITY)

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Abstract

The research discusses the substitution of specific nutrients into food products to resemble or replace other food products with higher nutritional value. The substituted food is commonly used as an alternative food product. In this study, I will create an herbal tea using dragon fruit peel, which can help prevent or address nutritional issues. Method: This research employed an experimental design using a Completely Randomized Design (CRD) with three different treatments: P1 (dragon fruit peel with drying temperature of 40°C), P2 (dragon fruit peel with drying temperature of 50°C), and P3 (dragon fruit peel with drying temperature of 60°C). Data collection was conducted through organoleptic/hedonic (preference) tests, evaluating the taste, texture, color, and physical appearance of the prepared dragon fruit peel tea, which was given to 25 untrained panelists. Conclusion: It can be concluded that the preferred color of the herbal tea made from dragon fruit peel was found in treatment P1, with a score of 4.16, using a drying temperature of 40°C for approximately 30 minutes. The preferred aroma of the dragon fruit peel herbal tea was also found in treatment P1, with a score of 4.24, using a drying temperature of 40°C for approximately 30 minutes. The preferred taste of the dragon fruit peel herbal tea was found in treatment P1, with a score of 4.44, using a drying temperature of 40°C for approximately 30 minutes. This indicates that a lower temperature resulted in less dry dragon fruit peel, leading to more appealing color, aroma, and taste.

Keywords: Substitution, Dragon Fruit, Obesity.

@Jurnal Ners Prodi Sarjana Keperawatan & Profesi Ners FIK UP 2023

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INTRODUCTION

Substitution itself is the addition of certain nutrients to food products that are made to resemble or replace other food products with higher nutritional value. Substituted food is generally used as an alternative food product. In this research I will make an herbal tea food from dragon fruit skin where from this herbal tea can help or prevent more nutritional problems.

Dragon fruit is classified as a fruit that grows in the tropics. Rainfall conditions are ideal and suitable for growth and development. The part of dragon fruit that is usually consumed is the red to purple flesh, while the skin has not been used and only discarded, even though the skin contains bioactive substances which are useful for the body such as antioxidants, and the skin of red dragon fruit also contains vitamins A and C, and contains several minerals such as calcium, iron, and phosphors. And besides that, it turns out that the skin of this red dragon fruit also contains lycopene which can function to fight heart disease, cancer.



Currently, the innovation of tea basic ingredients began to grow rapidly, for example tea from chrysanthemum petals, spices, and even soursop leaves began to be found. The presentation of tea drinks is generally found in the form of pieces of dried leaves, and also powder.

In making this time the herbal tea variant that will be made is by using ingredients from dragon fruit skin, where usually the skin of the red dragon fruit is only disposed of as waste without ever being used.



Dragon fruit plants are cactus plants that not only have fruit but also have flowers. A fruit that is

still widely traded in Indonesia. Where this fruit is a fruit that has a good taste and of course good for the health of the human body and has high antioxidants for our bodies.

The utilization of red dragon fruit skin is still not optimal, because there are still many people who do not know the efficacy of this red dragon fruit skin. And to use it into tea, there is processing that needs to be done so that the skin of this red dragon fruit can have a fairly high economic value.

The efficacy of red dragon fruit skin itself is very large but there are still many people who have not utilized it optimally, even though red dragon fruit skin can be made into herbal tea that can help to prevent more nutritional problems (obesity). Where tea itself is a drink that can refresh the body, and until now tea is still very popular with the people of Indonesia. So by utilizing the skin of this red dragon fruit as the main ingredient in making tea is the right thing.

Overnutrition (obesity) is often said to be a problem of overweight where nutritional status is not balanced due to excessive nutritional intake that can cause an energy imbalance between food consumption and energy spent can cause health problems. In general, the excess nutrition suffered by adolescents can be sustained until the age of gods. Where nutrition is more including a disease in the degenerative group such as diabetes mellitus for example. One way to find out if the person is overnourished or not is to measure BMI or what is meant by Body Mass Index. Of course, people who experience more nutrition have the impact of other diseases such as heart disease, diabetes mellitus, and stroke though. Therefore, it is necessary to handle this problem.

METHOD

This study used experimental research using an experimental design where a Complete Randomized Design (RAL) was carried out with 3 different treatments such as P1 (Dragon fruit skin with oven drying temperature 40 ° C), P2 (Dragon fruit skin with oven drying temperature 50 ° C), P3 (Dragon fruit skin with oven drying temperature 60 ° C). Where the data collection procedure was carried out by organoleptic / hedonic tests (preferences) regarding the taste, texture, color, and physical appearance of dragon fruit skin tea that had been made and given to 25 untrained panelists. The acceptability test will be carried out in March 2023 where the hedonic test assessment is expressed on a numerical scale with the following criteria::

1. Very fond : 5
2. Very like : 4
3. Likes : 3
4. Lack of likes : 2
5. Dislikes : 1

Processing

Manufacturing Stage

The first stage that will be carried out in

making dragon fruit skin tea is by separating the red dragon fruit skin with the flesh. Of course, before the process is carried out, the fruit must be washed thoroughly first until there is no more dirt left on the fruit. After this red dragon fruit is clean, the skin and fruit are separated using a knife, after that the dragon fruit skin is thinly sliced about 2mm.

The skin of the fruit that has been sliced must then be dried in the oven or can also be dried in the sun. The first step is to place the sliced dragon fruit skin on a baking sheet and then dry in the oven with temperatures of 40 ° C, 50 ° C and 60 ° C for ± 30 minutes.



Stage Pe decoction

The final stage in making / processing dragon fruit skin tea is boiling, where when the tea boiling process takes place the temperature in boiling tea can affect the content of compounds contained in the red dragon fruit skin herbal tea.

Here are the tools and materials used in the processing of dragon fruit herbal tea:

Tool

The tools we use in making this herbal tea are cutting boards, knives, baking pans, and plastic. And the tools used to analyze are ovens.

Material

The basic thing used in making this herbal tea is the fresh and still good skin of the red dragon fruit.

RESULTS AND DISCUSSION

1. Laboratory tests

Based on the objective assessment that has been carried out by testing dragon fruit skin samples, there is crude fiber content contained in samples of 150gr dragon fruit skin + 400 ml of water, there are results of 1.14% fiber. And as we know fiber is very good for the body where it can help the digestive process. Therefore, the substitution of tea from dragon fruit skin is very appropriate to be used as a substitute tea from tea usually.

1. Organoleptic / hedonic Test

From the results of organoleptic tests that have been carried out on samples of dragon fruit skin herbal tea.

Color

Color is an important role in food acceptance, besides that color is also used as an indicator of whether or not the food / drink is delicious. Color is also the main characteristic that makes consumers interested or not with the food / drink. Therefore, the test conducted on 25 panelists aims to determine the panelists' acceptance of the color, taste and aroma of herbal tea from dragon fruit skin on a hedonic scale with the criteria mentioned above.

Table. 1 Panelists' average value of color preference in dragon fruit peel herbal tea

Treatment	N	Average	Category
P1 (40°C)	25	4,16	Very fond
P2 (50°C)	25	3,76	Like
P3 (60°C)	25	3,72	Like

Description: Panelists' average favorability score on the color of dragon fruit peel herbal tea

From Table.1 It can be seen that the average value of panelists' favorability on the color of dragon fruit peel herbal tea is at P1=4.16 (very like), P2=3.76 (like), and P3=3.72 (like) with the highest value is with an average liking of 4.16, namely tea with P1 and the lowest is with an average favorability of 3.72, namely tea with P3.

Based on the results of the panelists' acceptability test on color with the average value obtained in making dragon fruit peel herbal tea from the three treatments, there were differences in the panelists' preferences for tea color.

From the results of the analysis using Duncan's test on the color of dragon fruit skin herbal tea from three treatments that have been carried out showed that P1 is different from P2 and P3, while P2 and P3 are not significantly different in terms of the average value. So it can be concluded that the color that the panelists like is the color with P1.

Aroma

Aroma itself is also the most important factor in a food/beverage product, because aroma can determine the good or unpleasant food / beverage product.

The results of the average value of the panelists on dragon fruit peel herbal tea in table 2.

Table 2. The average score of panelists' liking for the aroma of dragon fruit peel herbal tea.

Treatment	N	Average	Category
P1 (40°C)	25	4,24	Very fond
P2 (50°C)	25	3,84	Like
P3 (60°C)	25	3,32	Like

Description: Panelists' average rating of favorability for the aroma of dragon fruit peel herbal tea

From Table.2 It can be seen that the average value of panelists' favorability on the aroma of dragon fruit peel herbal tea is at P1=4.24 (very like), P2=3.84

(like), and P3=3.32 (like) with the highest value is with an average liking of 4.24, namely tea with P1 and the lowest is with an average favorability of 3.32, namely tea with P3.

Based on the results of the panelists' acceptability test on aroma with the average value obtained in making dragon fruit peel herbal tea from the three treatments, there were differences in the panelists' preferences for the aroma of tea.

From the results of analysis using Duncan's test on the aroma of dragon fruit peel herbal tea from three treatments that have been carried out showed that P1 is different from P2 and P3, while P2 and P3 are not significantly different from the average value. So it can be concluded that the scent that the panelists liked was the scent with P1.

Taste

Taste is the next factor that is no less important than color and taste. Where taste is Indra's response to nervous stimuli such as sweet, bitter, sour to the sense of taste and others. Taste is the most dominant factor in a product. Where the taste is a reference for judging whether or not the food / beverage product is delicious.

The results of the average score of the panelists on dragon fruit peel herbal tea in table 3.

Table 3. The average score of panelists' liking for the taste of dragon fruit peel herbal tea.

Treatment	N	Average	Category
P1 (40°C)	25	4,44	Very fond
P2 (50°C)	25	3,28	Like
P3 (60°C)	25	3,12	Like

Description: Panelists' average rating on the taste of dragon fruit peel herbal tea

From Table.3 It can be seen that the average value of panelists' liking for the taste of dragon fruit peel herbal tea is at P1=4.44 (very like), P2=3.28 (like), and P3=3.12 (like) with the highest value is with an average liking of 4.44 which is tea with P1 and the lowest is with an average liking of 3.12 which is tea with P3.

Based on the results of the panelists' acceptability test on taste with the average value obtained in making dragon fruit peel herbal tea from the three treatments, there were differences in the panelists' preferences for tea taste.

From the results of analysis using Duncan's test on the taste of dragon fruit peel herbal tea from three treatments that have been carried out show that P1 is different from P2 and P3, while P2 and P3 are not significantly different in terms of the average value. So it can be concluded that the taste that the panelists liked was the taste with P1.

Recapitulation of Organoleptic Test

Recapitulation of physical quality in the three treatments of herbal tea from dragon fruit peel can be seen in table 4.

Table 4. Recapitulation of organoleptic quality test on the three treatments of herbal tea from dragon fruit peel.

Assessed components	Average score on treatment		
	P1 (40°C)	P2 (50°C)	P3 (60°C)
Color	4,16	3,76	3,72
Aroma	4,24	3,84	3,32
Taste	4,44	3,28	3,12

Description: Recapitulation of the entire organoleptic quality test on the three treatments of herbal tea from dragon fruit peel.

Table 4 shows that the panelists' favorite color was P1 with an average score of 4.16 (very likes). The scent that the panelists liked was at P1 with an average score of 4.24 (very likes). and the taste that the panelists liked was at P1 with an average rating of 4.44 (very likes).

CONCLUSION

It can be concluded that the color of dragon fruit peel herbal tea from three treatments with a value of 4.16 levels prefers to be at P1 with a drying temperature treatment of 40 ° C with a drying time of ± 30 minutes. The aroma value of herbal tea from dragon fruit skin that was preferred by the panelists was at P1 with a value of 4.24 levels preferring the drying temperature treatment of 40 ° C with a drying time of ± 30 minutes. The taste value of herbal tea from dragon fruit peel that was preferred by the panelists was at P1 with a value of 4.44 levels preferring the drying temperature treatment of 40 ° C with a drying time of ± 30 minutes. It can be concluded that the lower temperature makes the dried dragon fruit skin less dry so that the color and aroma produced are more attractive as well as the taste.

Suggestions for further research on the processing of this herbal tea, in the future can be presented in the form of a dip so that the presentation can be more practical and faster. And research on the length of storage time of the herbal tea.

BIBLIOGRAPHY

- Sari, L., Hidayat, F., & Nasir, A. (2020). Pemanfaatan Kulit Buah Naga (*Hylocereus polyrhizus*) sebagai Bahan Baku Pembuatan Teh Celup Herbal dengan Penambahan Kayu Manis (*Cinnamomum lumbini* L). *Serambi Saintia: Jurnal Sains dan Aplikasi*, 8(1), 1-14.
- Ardianta, I. K., Yusa, N. M., & Putra, I. N. K. (2019). Pengaruh Suhu Pencelupan Terhadap Karakteristik Minuman Teh Herbal Kulit Buah Naga Merah (*Hylocereus Polyrhizus*). *Jurnal Ilmu Dan Teknologi Pangan (Itepa)*, 8(1), 18.
- Purnomo, B. E., & Johan, V. S. (2016). Pemanfaatan

- kulit buah naga merah (*Hylocereus Polyrhizus*) sebagai teh herbal (Doctoral dissertation, Riau University).
- Agustini, N. P., Puryana, I. G. P. S., & Putu Elya Diana Putri, E. (2019). Pengaruh Suhu dan Lama Penyeduhan Terhadap Karakteristik Mutu Teh Kombinasi Kulit Buah Naga Merah (*Hylocereus polyrhizus* sp.) Dan Kulit Buah Jeruk Mandarin (*Citrus reticulata*) (Doctoral dissertation, Poltekkes Kemenkes Denpasar).
- Aiyuni, R., Widayat, H. P., & Rohaya, S. (2017). Pemanfaatan Limbah Kulit Buah Naga (*Hylocereus costaricensis*) dalam Pembuatan Teh Herbal dengan Penambahan Jahe. *Jurnal Ilmiah Mahasiswa Pertanian*, 2(3), 233-243.
- Hatuwe, M. (2020). Pemanfaatan Limbah Kulit Buah Naga Merah (*Hylocereus polyrhizus*) Sebagai Bahan Baku dalam Pembuatan Selai (Doctoral dissertation, IAIN Ambon).
- Wibowo, N. I. (2021). Pemanfaatan Limbah Kulit Buah Naga Merah (*Hylocereus Polyrhizus*) Dengan Penambahan Serai (*cymbopogon citratus*) sebagai minuman herbal. *Pro-Stek*, 3(2), 107-119.
- FAUZI, I. (2017). EFEK PENURUNAN GLUKOSA DARAH EKSTRAK ETANOL KULIT BUAH NAGA MERAH (*Hylocereus polyrhizus* FAC Weber) PADA MENCIT JANTAN (Swiss Webster) DENGAN METODE INDUKSI GLUKOSA (Doctoral dissertation).
- Faridah, A., & Holinesti, R. (2014). Ekstraksi, Karakterisasi, Purifikasi, dan Identifikasi, Betalain dari Kulit Buah Naga Merah.
- Kharismawati, R. (2020). Pembuatan Selai Lembaran dari Jambu Biji Merah dan Kulit Buah Naga Merah Sebagai Makanan Selingan Tinggi Serat (Doctoral dissertation, Politeknik Negeri Jember).
- Laksmi, A. Y. (2020). Pengaruh Substitusi Tepung Kulit Buah Naga Merah (*Hylocereus polyrhizus*) dan Tepung Pisang (*Musa paradisiacal*) Terhadap Daya Terima, Nilai Gizi, dan Nilai Ekonomi Pada Biskuit Untuk Mencegah Hipertensi (Doctoral dissertation, UNIVERSITAS AIRLANGGA).
- Aditri, P. (2020). PENGARUH SUBSTITUSI EKSTRAK KULIT BUAH NAGA TERHADAP SIFAT ORGANOLEPTIK DAN TOTAL FLAVONOID SORBET BUAH KESEMEK (Doctoral dissertation, Universitas Pembangunan Nasional Veteran Jakarta)