

## An Analysis of Macro Nutrition in Red Dragon Fruit (*Hylocereus Polurhizus*) Peel Dodol

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### ABSTRACT

Dragon fruit peel contains high anthocyanin, pectin, and fiber. In addition, it also has an antioxidant capacity, ant proliferative effect, and polyphenols. In addition, the antioxidant activity in the peel of the dragon fruit is greater than in its flesh. The purpose of this study is to analyze the macronutrient of dragon fruit peel dodol. This is experimental research with laboratory analysis. The implementation includes data, analysis, and interpretation of the data obtained from the results of laboratory analysis. The sample of this research is 1-2 kg of dragon fruit peel. Based on the research result, the carbohydrate content in sample 1 test 1 is 3021 mg and test 2 is 3570 mg, in sample 2 test 1 is 3881 and test 2 is 4050 mg. The protein content of sample 1 test 1 is 1023 mg and test 2 is 1264 sample in test 1 of 1183 mg in test II of 1130 mg. The fat content value of sample 1 test 1 is 571 mg and test 2 is 684 mg, sample 2 of test 1 is 663 mg in test 2 is 730 mg. It is suggested that the government should take some food diversification to increase people's interest to consume nutritious food to increase immune system so that the community's nutritional status can increase.

### INTRODUCTION

Red dragon fruit until now has been cultivated in Indonesia. Cultivation of red dragon fruit that is increasingly using the skin. Lately, Indonesian people are getting to know and love dragon fruit, so that skin waste is piling up (1).

Red dragon fruit peel is very beneficial for health but in reality it is only considered as agricultural waste which has not been used properly. Most of the dragon fruit peel is just thrown away. Dragon fruit peel that is thrown away can cause environmental problems, especially water pollution. Therefore, in addition to being fed to animals, it can also be used in the production of pectin, which will then increase the dragon fruit juice processing industry waste. Dragon fruit skin can be applied as a natural food colorant and as an additional ingredient to increase the nutritional value of the product. In addition, dragon fruit skin is very useful for facial skin so that it can make you stay young (2).

Red dragon fruit skin also has a fairly high dietary fiber content, which is around 46.70%. Based on the content possessed by the red dragon fruit skin, the red dragon fruit skin can be used as functional food, namely artificial grass jelly, ice cream, fruit leather, wet noodles, natade coco (3). Among the many plant pigments that can be used as natural food coloring, there are other pigments that can also be used as natural dyes, namely betacyanin pigments from red dragon fruit peels. (4).

Based on the description above, the authors are interested in conducting research on the analysis of macronutrient content in red dragon fruit peel (*Hylocereus polyrhizus*).

### METHODOLOGY

The type of research used is experimental research with laboratory analysis. The implementation includes data, analysis and interpretation of the data obtained from the results of laboratory analysis. This study was intended to analyze the macronutrient content of red dragon fruit skin dodol. This research will be conducted in the Feed Nutrition Laboratory, Faculty of Animal Husbandry and Fisheries, Tadulako University, Palu. This research will be carried out from July to August 2020. The sample in this study used 1-2 kg of red dragon fruit peel.

## RESULTS

Research Analysis of macronutrient content including carbohydrates, protein, fat has been carried out at the Feed Nutrition Laboratory of Tadulako University Palu. This research used the Luff School Method, the Soxhlet Method, and the Kjeldahl Method. This research was conducted in July 2020, while the results of this study are as follows:

**Table 1.** Results of Analysis of Macro Nutrient Contents in Red Dragon Fruit Skin Dodol

No	Sample Code	Carbohydrate %			Protein %			Fat %		Average
				Average			Average			
		P1	P2		P1	P2		P1	P2	
1	Sample 1 2:1	30,21	35,7	32,95	10,23	12,64	11,43	5,71	6,84	6,27
2.	Sample 2 1:1	38,81	40,5	38,65	11,83	13,30	12,56	6,63	7,30	6,96

Source: Feed Nutrition Laboratory, Untad, 2020

The table above shows that the highest carbohydrate content is in sample 2 which is 40.5% in treatment 2 (P2) while in treatment 1 (P1) it is 38.81% then the lowest carbohydrate content is in sample 1 which is 30.21% in treatment 1 (P1) and in treatment 2 (P2) as much as 35.7%.

The highest protein was in sample 2, which was 13.30% in treatment 2 (P2) while in treatment 1 (P1) it was 11.83%, then the lowest protein content was in sample 1, which was 10.23% in treatment 1 (P1). and in treatment 2 (P2) as much as 12, 64%. The highest fat content lies in sample 2 which is 7.30% in treatment 2 (P2) while in treatment 1 (P1) as much as 6.63% while the lowest fat content is found in sample 1 is 5.71% in treatment 1 (P1) and in treatment 2 (P2) as much as 6.84%.

## DISCUSSION

### Carbohydrate Level

Analysis of carbohydrate levels was carried out to determine the carbohydrate content contained in dodol. The results of the analysis of carbohydrates in red dragon fruit peel dodol obtained the highest carbohydrate content in sample 2 with an average value of 38.62% while the lowest carbohydrate content was in sample 1 with an average value of 32.59%.

Carbohydrates serve to provide energy for the body. One gram of carbohydrates produces 4 kcal. Some of the carbohydrates in the body are in circulating glucose for immediate energy needs, some are stored as glycogen in the liver and muscle tissue, and some are converted into fat for later storage as energy reserves (5).

Based on the 2019 RDA, the carbohydrate needs for adult men aged 19-29 years is 375 kcal and for adult women aged 19-29 years is 309 kcal. This shows that in consuming 100gr red dragon fruit peel lunkhead, it can meet about 38.65% adult men and 32.59% adult women, the carbohydrate needs of adults.

### Protein Level

Protein content testing is intended to determine the total protein contained in red dragon fruit peel lunkhead. The results of the analysis of the highest protein content were in sample 2 with an average value of 12.56% while the lowest protein content was found in sample 1 with an average value of 10.23%.

Protein is a nutrient that is very important for the body, because this substance in addition to functioning as fuel in the body also functions as a building block and regulator. It also functions as the formation of new cells to replace cells in damaged tissues and as a source of energy (6).

Based on the 2019 RDA, the protein requirement for adult men aged 19-29 years is 65gr and for adult women aged 19-29 years as much as 60gr. This shows that consuming 100 g of red dragon fruit peel lunkhead can already meet about 12.56% of adult men and 12.64% of adult women, the protein needs of adults.

### **Fat level**

Oil or coconut milk needs to be added to food, such as in the manufacture of red dragon fruit skin dodol because it contains high energy. Fat or oil can give a savory taste and make food softer and easier to swallow. Common types of oil used are coconut oil, coconut milk, cooking oil, peanut oil and other vegetable (7).

The results of the analysis of fat content in dragon fruit peel lunkhead. The highest fat content is in sample 2 with an average value of 6.96% while the lowest fat content is in sample 1 with an average value of 6.27%.

Fat also functions in maintaining body temperature. Protective organs The layer of fat that covers organs, such as the heart, liver and kidneys, helps hold these organs in place and protects against impact and other hazards (8).

Based on the 2019 RDA, the fat requirement for adult men aged 19-29 years is 91 grams and for adult women aged 19-29 years is 75 grams. This shows that in consuming 100 g of red dragon fruit peel lunkhead, it can meet around 6.96% and 6.27% of the protein needs of adults.

Previous research conducted by Mardiah Wati and Rahmi Holinesti with the title Analysis of the quality of red dragon fruit peel extract lunkhead with the results of the study showing that the addition of red dragon fruit peel extract affected the quality of color and texture but had no effect on the quality of shape, aroma, and taste. The best treatment was the addition of red dragon fruit peel extract by 45% (X3).

This research was also carried out by Nia Rochmawati with the title of using red dragon fruit skin as flour for making cookies. In this case, the use of red dragon fruit peel as flour for making cookies and obtaining carbohydrates yields as much as 52.47%, protein 5.63% and fat 27.03%.

Based on the results of research on dragon fruit peel lunkhead, sample 1 can be recommended to be a good food for adults 19-29 years old in terms of macronutrients. It can be seen from the results of the carbohydrate content in sample 1 that it can meet about 80.33% of the carbohydrate needs of adults aged 19-29 years (9).

Previous research was also carried out by Ridho Asra et al, with the title Antioxidant Activity of Dried Extract of Skin and Flesh of Red Dragon Fruit. The results of testing the antioxidant activity of extracts of skin and flesh of red dragon fruit obtained IC50 values at concentrations of 28,900 and 322.93 g/mL (not has antioxidant activity and has weak activity) with a comparison of vitamin C the IC50 value was obtained at a concentration of 7.9µg/mL a strong antioxidant (10).

### **CONCLUSION**

It is known that from the two samples of red dragon fruit peel dodol, the macronutrient content in red dragon fruit peel dodol which is mostly found in sample 2 is 38.65% carbohydrates, 12.56% protein and 6.96% fat, while in sample 1 it is 32.59% carbohydrates, 11.43% protein and 6.27% fat.

### **SUGGESTION**

With this, further research is recommended by paying attention to the dose and duration of treatment with better research methods, and it is recommended that the government do some food diversification to increase the attractiveness of the community to consume nutritious food to improve the immune system so as to improve the nutritional status of the community. The diversity of processed food products is also very beneficial for health.

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