Analysis Production Dodol Manggis Leuser Mountain as Food to Eat, To Revenue District Community Kutacane Southeast Aceh

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Abstract

Mangosteen is one of the types of fruits that thrive at the foot of Mount Leuser Kutacane, Southeast Aceh district. Mangosteen is one of the fruits that contain a lot of anti-oxidant, anti-bacterial, anti-inflammatory and anti-carcinogenic substances, anti-proliferation and contains a variety of Vitamin C, Vitamin B2, Folate, Magnesium and Xanthothes. All of these are very beneficial for the human body. Mangosteen fruit is exported out of town and even abroad with mangosteen fruit sorting. The rest of the soteran becomes a problem for the community so that it becomes a discarded item. With this research, it is hoped that this mangosteen waste product (soteran) can be appointed as a product, so that this product can become one of the culinary foods of Kutacane, Southeast Aceh Regency. The resulting product is a food product, namely Dodol Mangosteen. The purpose of this study is to introduce this mangosteen lumphead so that it can be accepted by the wider community. And to know the process of making dodol from mangosteen flesh, knowing the formulation of adding glutinous rice flour with the addition of brown sugar in making dodol. And the parameters observed were chemical analysis (water and fat content), and this research was carried out by organoleptic tests. This organoleptic test is a hedonic method of panelists' preference for texture, aroma, taste and color. The data obtained were processed using a completely randomized design with three replicates of variables.

Keywords
mangosteen (Garciana mangostana linn); dodol; white glutinous flour, red sugar

I. Introduction

Mangosteen with the Latin name (Garciana mangostana Linn) is one of Indonesia's native fruit plants with deep purple fruit color with white flesh and creamy seeds, which has potential. Exports are very large. This plant has been nicknamed the Queen of Fruit because of its deliciousness (Anonymous 2006). Mangosteen has many extraordinary health benefits or is commonly referred to as Functional Food. The potential and opportunity for the mangosteen market is very large due to the large demand in the global market. The benefits of this fruit in the country itself are not well known by the public. Mangosteen fruit which has enough potential, is currently managed very simply. Some countries have long used mangosteen as medicine and therapeutic material, especially the skin (Permana, 2010) and besides that, mangosteen can also be processed into a very distinctive food source for a new discovery.

Several types of fruit have been utilized as a source of energy but the income has not met expectations. Mangosteen fruit is one of them. So far, people only judge mangosteen from one side only. People only enjoy the taste of the mangosteen fruit, so they know that the skin of the mangosteen fruit contains many substances that are beneficial to the human body.
such as antioxidants, anti-bacterial, anti-inflammatory, anti-carcinogenic, anti-proliferative (Sukardi et al, 2008).

There are various nutrients contained in the mangosteen fruit, including Vitamin C, Vitamin B2, Folate, Magnesium, and Xonothones, the nutritional content in the mangosteen fruit is believed to be able to lose weight, increase endurance and even prevent cancer, control blood levels blood sugar, relieves arthritis, helps maintain healthy skin, heart disease and can prevent premature aging. Based on the results of research on bioactivity test of crude citrus fruit (Ramadhianto, 2019). Fruit tree is a tree which bears fruits that is consumed or used by human and some animals – all trees that are flowering plant produce fruits (Ajayi, 2020). The number of fruits per stalk was calculated in each experimental plot on the sample plants at harvest and separated according to each plot (Hasibuan, 2019).

The variation of mangosteen fruit processing in Indonesian society is still low, mangosteen fruit is processed as traditional ingredients such as mangosteen peel juice, mangosteen rind syrup and mangosteen rind capsules. That's why here we want to make and research the manufacture of mangosteen pulp lumphead products. With the hope of processing a variety of processed mangosteen fruit can be a variety of processed foods so processed is to encourage the community to improve utilization local fruit as additional revenue and reduce the loss of crops and extending the shelf life (Muctadi, 2000)

Because because people possibility live around the slopes Gunung Leuser or at the foot of Mount Leuser, there is a lot of seasonal income, namely the harvest of the Gunung Leuser mangosteen fruit. Usually this fruit is sold to Toke who come from Medan, Padang and other cities, the sales system is weighed per kilo in addition to previously held a voting, where the results soterannya sold and the rest of the soterannya thrown away. So that the utilization of the mangosteen fruit can be utilized optimally to generate people's income and serve as culinary food for Southeast Aceh, and its use with one of the processing of the mangosteen flesh is to extend the shelf life and the usefulness value of the mangosteen flesh is used as a raw material for a food product. dodol mangosteen flesh, snack food and add to the types of culinary food in Kutacane, Southeast Aceh Regency, Nanggro Aceh Darussalam Province (Indonesia). The processing of mangosteen flesh is expected to make it easier for people to consume and utilize the benefits of mangosteen flesh (Sugito 2003).

Dodol flesh of the mangosteen fruit as a culinary food is known as instant or ready-to-eat products. Snacks or snacks through the utilization of overripe mangosteen flesh in combination with white glutinous rice flour, brown sugar and coconut milk, can be produced at a lower cost than food. other solids, containing no or little water content with low weight and volume, having better product quality and stability, carrying nutrients such as pytamine and minerals that are easily damaged when used in the form of food (Verral, 1984).

The process of processing mangosteen into a product has the support of the government of Southeast Aceh, because the sorting of mangosteen fruit does not get too much attention from the local community to be processed into a product, therefore the process of processing mangosteen into a product is approved by the government and is beneficial for the community, as an addition to people's income that typical fruit from Southeast Aceh, especially the Darul Hasanah sub-district at the foot of Mount Leuser, has good potential to be processed. Done traditionally.

Dodol is a processed product that has long been known by the public in the process of making it not so difficult because it can be done traditionally. Dodol is a semi-wet food because it contains 20% water content. When viewed from the chemical composition and nutritional value, the flesh of the mangosteen fruit contains many benefits for the health of the human body.
2.1 Problem Limitation
So that the subject matter discussed is not too broad, this problem is limited as follows:

1. Subject of the study
   Mangosteen flesh extract, glutinous rice flour and brown sugar as ingredients for mangosteen lunkhead.

2. Research Objects
   Dodol mangosteen and glutinous rice flour with the addition of coconut milk and the addition of brown sugar

3. Baro Meter Research
   Test of Anti-oxidant activity, organoleptic properties (color, taste, aroma and texture) and acceptance in the community.

2.2 Problem Formulation
Based on the background of the problem above, the formulation of the activity problem can be drawn as follows:

1. How is the antioxidant activity of dodol from the combination of mangosteen pulp extract, white glutinous rice flour with coconut milk and the addition of variations in brown sugar concentration?

2. What are the organoleptic properties and public acceptance of mangosteen dodol from the combination of mangosteen pulp extract, white glutinous rice flour with the addition of varying concentrations of brown sugar?

2.3 The Objectives of Research
1. To know the antioxidant activity of dodol, the combination of mangosteen flesh with glutinous rice flour, coconut milk and the addition of variations in brown sugar concentration.

2. Knowing the results of organoleptic properties and acceptance of dodol in the community from the combination of mangosteen pulp extract, white glutinous rice flour with the addition of variations in brown sugar concentration.

3. To increase the variety of culinary foods in Kutacane, Southeast Aceh district, Nanggro Aceh Darussalam (Indonesia) Province.

2.4 Research Benefits
a. For Researchers
   1. Knowing how to make lunkhead from mangosteen pulp extract and white glutinous rice flour and coconut milk with the addition of variations in concentration Brown sugar.

2. Adding insight about the benefits of processed dodol from mangosteen pulp extract, white glutinous rice flour, coconut milk with the addition of variations in the concentration of brown sugar that have been made

b. For the Community
   1. Can open a new business center in the field of selling nutritious and delicious dodol.

2. Increase the economic value of overripe mangosteen and white rice flour and coconut milk as well as variations in the addition of brown sugar.

3. Adding dodol food types.

c. For Further Researchers
   a. Expected to be a reference in conducting further research.

   b. Providing ideas and inputs any kind of research.
II. Review of Literatures

2.1 Mangosteen (Garciana Mangostana Linn)

Mangosteen with the old Latin (Garciana Mangostana Linn) is a plant native Indonesian fruit with dark purple fruit color white-fleshed fruit, and Cream seeds, which have huge export potential. This plant has been nicknamed the Queen of Fruits because of its special taste (Anonymous, 2006). The benefits of this fruit in the country itself are not well known by the public. Mangosteen fruit which has enough potential, is currently managed very simply. Some countries have long used mangosteen as medicine and therapeutic material, especially the skin (Permana, 2010) and besides that, mangosteen can also be processed into a very distinctive food source for a new discovery.

Mangosteen tree has a height of 5 meters to 25 meters, woody trunks, leaves are smooth thick and slippery, the taste of the fruit is sweet, sour, and thick when exposed to the sap, this fruit is a seasonal fruit.

2.2 Dodol

Dodol is one type of processed household agricultural products that is semi-wet, white to brown in color made from a mixture of white glutinous rice flour, brown sugar and coconut milk. Dodol processing has been known to the public for generations, the process is simple, inexpensive and absorbs a lot of labor (Soemaatmadja, 1997). Dodol is made from the flesh of the mangosteen fruit which is very ripe, resulting from the sale of Soteran which is melted by mixing with the addition of glutinous rice flour, brown sugar and coconut milk which has other food moisture content, according to the definition then In the manufacture of mangosteen dodol it is allowed to add other ingredients such as glutinous rice flour, tapioca flour and other ingredients.

Semi-wet food is a food that has a water content that is not too low, but this food can last a long time during storage, because most bacteria cannot grow at Aw 0.90 or below. In addition to storage, in addition to making the water content 10-15%, the Aw of food must also be below 0.90 to prevent the growth of yeast and mold (Winarno, 1980).

Processing of semi-wet foodstuffs, there are 2 types of coarse, namely adsorption and absorption. In the adsorption type, the material is dried while being observed by adding back until the desired balance is obtained. While the desorption type of material is put in a solution that has a higher osmotic pressure until the desired AW is obtained (Ishak and Sarinah, 1985)

According to the Indonesian National Standard (SNI) the definition of dodol is a food made from glutinous rice flour, coconut milk and sugar with or without the addition of other permitted food ingredients, this SNI consists of:-Scope,-Definition,-Quality Requirements,-Sampling method,-Test method,-Packaging method,-Enclosure marking requirements. SNI 01.2986.1992 Dodol has a standard, this standard is a revision of SII.1616 85.dodol. The revision is prioritized on quality requirements for the reason that it supports the instructions of the Minister of Industry No.04/M/Ins/10/1989, protects consumers and supports the development of the agro base industry support exports and oil and gas. The quality of lunkhead can be seen in table 1:

<table>
<thead>
<tr>
<th>No.</th>
<th>Criteria for Test</th>
<th>Unit</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Condition:</td>
<td></td>
<td>Normal</td>
</tr>
</tbody>
</table>

Table 1. Quality Requirements for Dodol
| 1.1 Odor | Normal | Typical |
| 1.2 Taste | Normal | Normal |
| 1.3 Color | Maks.20 | Min.45 |
| 1.4 Texture | Min.3 | Min.7 |
| Water, % w/w | accordance SNI.0222-M and Rule Men Kes No.722/Men.Kes/Per/IX/88 |
| Amount of sugar as saccharose, %, w/w | Not Turned |
| Protein (N x 6.25); %, w/w | Max.1.0 |
| Fat, %, w/w | Max.10.0 |
| Food Additives | Max.40.0 |
| 7.1 Artificial Sweeteners | |
| Metal Contaminants: | |
| 8.1 Lead (Pb), mg/kg | Max.0.5 |
| 8.2 Copper (Cu), mg/kg | Max.5.0x10<sup>2</sup> |
| 8.3 Zinc (Zn), mg/kg | <3 |
| Arsenic (As) | Max.1.0 |
| Microbial Contamination: | |
| 10.1 Total Plate Count | Max.1.0x10<sup>2</sup> |
| 10.2 E. coli | |
| 10.3 Kapang and yeast | |

**SNI 01-2986-1992**

**2.3 Additional Materials**

**a. Glutinous Rice (Oryza Sativa Glutinous)**

Glutinous rice is a type of rice whose color is whiter than other rice, this glutinous rice has a larger size than ordinary rice, if cooked, the glutinous rice will have a sticky texture. White glutinous rice contains carbohydrates which are quite high, which is about 80%. In addition to carbohydrates, the content in glutinous rice is about 4% fat, 6% protein and 10% water. Carbohydrates in rice flour contain 2 compounds, namely amylase and amylopectin.
with levels of 1% and 99% respectively. In the process of making dodol, in addition to glutinous rice flour, flour can be added with the intention of making the dodol gel-like which can last a long time (anonymous 2007).

White glutinous rice flour is one type of flour derived from glutinous rice (Oryza sativa glutinous), which is a variety of rice (Oryza sativa) family Graminae which includes grains (cereals) which are ground or ground with a grinding machine (Widia Damayanti, 2000).

White glutinous rice flour gives a thick texture so that it forms a dodol texture that becomes elastic, high amylopectin content causes gelatinization to occur very easily when added with water and gets a heating treatment. This happens because of the binding of hydrogen and molecules of white rice flour (Gel) which are thick (Siswoputranto, 1989).

b. Sugar
Sugar includes organic compounds that are important as food ingredients, because sugar is digested and in the body as a source of calories. Besides being a food ingredient, sugar is also used as a food preservative, raw material, and alcohol and mixing drugs. Including carbohydrates, has a sweet taste and is soluble in water (Gautara and Soesarsono, 1981).

Sugar belongs to a group of compounds called carbohydrates which consist of three groups, namely, monosaccharides, disaccharides and polysaccharides. Monosaccharides are examples of simple sugars that are derivatives of disaccharides. When sucrose is hydrolyzed, two simple sugar molecules are produced, namely a glucose molecule and a fructose molecule. This sweetness is a sugar characteristic that can be measured subjectively and objectively (Sugiono, 2002).

Sugar as well as a sweetener in a food. Also, the addition of sugar affects the viscosity of the gel because the sugar will bind to water, resulting in slow starch development. The temperature of the gelatinization becomes higher, causing the gel to be more resistant and durable (Sakidja, et al 1985).

The concentration of sugar is quite high (70%) which can inhibit microbial growth, but in general sugar is used as one of the other preservation techniques. For example, combined with low acidity, pasteurization, storage at low temperatures, drying, freezing and the addition of chemicals such as SO2, Acid Benzonat and others (Isaac and Sarinah, 1985).

c. Santan
Santan is an extract or oil from coconuts (Cocos nucifera) which is taken by pressing the coconut flesh with water or measuring the content of the coconut fruit by squeezing or kneading and adding water (Herman, 1975).

Old fresh coconut flesh has a water content of about 50% and 30% fat, because in the manufacture of dodol coconut milk is evaporated, then what determines the final product is the oil (Sudari 1984).

The coconut milk used in making dodol consists of two kinds, namely thick coconut milk and thin coconut milk, the function of coconut milk in general is: as a taste and aroma enhancer. Thick coconut cream is important in making dodol because it contains a lot of fat so that it produces dodol which has a delicious taste and form a smooth texture watery coconut milk has the function of diluting flour and other dough, so that it forms a dough and has the function of dissolving sugar (Satuhu, 2004).

d. Semi-wet food (Intermediate Moisture Foots, IMF)
According to Karel (1976) semi-wet food is classified into 2 types, namely traditional and modern. Some traditional foods are processed products of addition of humectants,
processed products of adding sugar and salt and rerotian products. While the modern semi-
wet food type is divided into three types, namely:
1. Wet brewing, where part of the solid food material is added to the solution so that the
   final product has the desired Aw value.
2. Dry brewing, in which part of the solid food is rehydrated first, then brewed with a
   solution that has the desired osmotic component.
3. Mixing where the components of food are weighed, mixed, cooked to produce a final
   product with the desired Aw value.

Water is an important component in food because of its role in chemical and
biochemical reactions. In semi-wet processing, water content and water activity will affect
the results obtained as well as resistance to microbes, chemical reactions, texture, and
calorific value and so on. Sudarsono, 1981).

Semi-wet food has a water activity value between 0.6-0.9 and a level of 10-14%. The
water content in food has a major role in the chemical reactions that occur, including lipid
oxidation reactions and non-enzymatic browning (Mailard's reaction). Water activation is an
important factor in controlling microbes in semi-wet food (Soekarto, 1970).

e. Factors Influencing Quality

According to idrus (1994) Factors affecting the quality of Mangosteen Meat Dodol are:
Weighing of Materials

The process of weighing materials must be carried out correctly, using standard
measuring instruments, weighing the ingredients so that they do not become cause of failure
in the process of making Dodol Mangosteen. The ingredients are weighed and the preparation
steps are:
1. White flour glutinous rice
2. Brown sugar (Aren)
3. Coconut milk
4. Mangosteen flesh
5. Cooking method
6. Cooking time

f. Organoleptic

The organoleptic test is intended to determine the assessment pinelis to the product
produced. The type of testing carried out in this Organoleptic test is the hedonic method of
the panelists' preference for Texture, Aroma, Taste and Color resulting from each treatment
in the test, the triangular method of liking or disliking from the panelists to products that are
considered not too concerned. Panelists were informed about the aims and objectives of the
study and asked to give an assessment.

The taste of food actually consists of three components, namely: Taste, Smell, and
Mouth Stimulation. The odor produced from food largely determines the delicacy of the food
ingredient (Rampangan, 1985).

Organoleptic as well as testing of food ingredients based on preferences and
willingness. To assess a product, in research on food ingredients, the thing that determines
whether a product is accepted or not is its sensory characteristics. There are 6 (six) stages in
this sensory assessment, namely: 1. Receiving materials 2. Recognizing the material. 3
conducting clarifications, 4 recognizing the properties of the material, 5. Recalling the
material that has been observed, 6. Reusing the sensory properties of the product.

Determinants of food ingredients that are generally accepted by panelists are
determined by several factors including:
a. Color
b. Taste/Aroma
c. Texture.

g. Moisture Content
The application of water content quality standards is related to the shelf life of the product itself, high water content can affect the durability of food ingredients and shorten shelf life and facilitate the growth of macroorganisms, because it is a good medium for their habitat. Water is an important component in ingredients. Food because water can affect the appearance, texture and taste of food. The water content in foodstuffs also determines the freshness and durability of these foodstuffs (Winarno, 1980).

h. Fat Content
Fat content is almost found in all foodstuffs with different contents, but fat is often added intentionally to food ingredients for various purposes. In the processing of foodstuffs, fat has a function as a medium for conducting heat, adding calories, and improving the texture and taste of foodstuffs (Hardiansyah, 2000).

III. Research Methods

3.1 Time and Place
The research was carried out from July to September 2021 in Rambung teldak village, Darul Hasanah sub-district, Southeast Aceh district and in the food processing laboratory of Southeast Aceh district.

3.2 Tools and Materials
The tools used in this research are Scales, Analytical, Desicator, Blender, Measuring Cup, Basin, Soxhlet, stove, spoon, strainer, stirrer, knife and pan. The ingredients used in this research are: Mangosteen Fruit (Garciana Mangostana Linn), Brown Sugar, White Glutinous Rice Flour (Rose Brand), Coconut Milk, Water, Chlorotome, Filter Paper, Klim Plastic, Aluminum foil, Tissue Roll.

3.3 Research Procedures
a. Preliminary Research Preliminary
Research was carried out with the aim of knowing the addition of white glutinous rice flour and the right addition of brown sugar in making dodol mangosteen.

b. Main Research
The research consists of making mangosteen dodol and then analyzing the water content, fat content, organoleptic test on the panelists' preference for Mangosteen Dodol.
a. Working Procedures for Making Mangosteen Lunkhead
Working Procedure for Making Mangosteen lunkhead. These are as follows:
1. Mangosteen fruit is sorted, peeled, peeled first, then washed and drained.
2. After the mangosteen flesh has been drained, it is weighed as much as 250 grams of the mangosteen flesh, then crushed or blended while adding 100 ml of liquid coconut milk gradually / a little bit to get the mangosteen pulp.
3. Mangosteen pulp that has been formed (300 grams), is added with glutinous rice flour and brown sugar according to the research treatment, then stirred evenly.
4. Mixing the dough, put the dough into the pan, then heating and stirring in the pan for 2-3 hours so that the lunkhead is smooth and ready to be removed, printed and desired.
5. After the mangosteen lunkhead is formed, it is packaged and analyzed.

c. The Treatments
Treatments given to the manufacture of mangosteen dodol are as follows:
- A1: 300 grams of mangosteen pulp + 30% glutinous rice flour + 40% Brown sugar
- A2: 300 grams of mangosteen pulp + 40% glutinous rice flour + 45% Brown sugar
- A3: 300 grams of mangosteen pulp + 50% glutinous rice flour + 50% Brown sugar

d. Water Content Analysis (Sudarmadji, et al, 1997)
The samples were weighed as much as 2 grams and then put into a cup that has been cleaned and has been dried in an oven at a temperature of 100-105°C, for 3-5 hours. Then cool in a desiccator for 3-5 minutes and then weighed. Reheated in the oven for 30 minutes, then cooled into a desiccator, then weighed. This is done until a constant weight is obtained. The difference in weight after and before drying is calculated using the following equation:

\[
\text{Moisture Content (\%) = } \frac{\text{Initial Weight} - \text{Final Weight}}{\text{Final Weight}} \times 100\%
\]

e. Fat Content Test (Sudarmadji et al, 1997)
The fat content test was determined by the Soxhlet method, the working procedure for determining the fat content was: The sample was carefully weighed as much as 1 gram and then inserted into a 10 ml test tube. Chloroform approaching scale. Then tightly closed, shaken and left overnight. Squeeze it on a scale of 10 ml with the same fat solvent using a pipette, then shaken until homogeneous, then filtered with filter paper into a test tube. 5 cc pipette into a cup of known weight (a gram) then oven at 100°C for three hours. Put in a desiccator for ± 30 minutes, then weighed (b grams) the crude fat content is calculated with the following formula:

\[
\text{Fat Content (\%) = } \frac{P \times (b - a)}{\text{Gram Example}} \times 100\%
\]

Where Fat P = Dilution = 10/52

f. Organoleptic Test
In this study, organoleptic tests were also carried out which included Color, Taste, Aroma and Texture, on the mangosteen lunkhead produced, using the hedonic method based on the level of likes and dislikes of the panelists. The score used was 9 (very like very much), 8 (liked very much), 7 (liked), 6 (liked somewhat), 5 (usual), 4 (disliked), 3 (disliked), 2 (disliked very much), 1 (disliked very much).

g. Data Processing
The data obtained from this study were processed using a completely randomized design (Ral) experimental method with three replicates of variables.
IV. Discussion

4.1 Preliminary Research

Preliminary research was conducted to determine the concentration of glutinous rice flour and brown sugar to be used for the manufacture of mangosteen dodol. From the preliminary study, the best treatment was obtained after organoleptic tests were carried out, namely the addition of 50% glutinous rice flour and 50% brown sugar.

4.2 Water Content

Water content testing is intended to determine the total water contained in mangosteen dodol, with the addition of glutinous rice flour and brown sugar. (Syarief and Anies, 1988)

4.3 Fat Content

Oil or coconut milk needs to be added to food such as in the manufacture of a mangosteen dodol food, because it contains high energy. Oil or fat gives a very savory and delicious taste to a food, and the food becomes softer and tenderer. The types of oil that are very commonly used are coconut oil, coconut milk, cooking oil, peanut oil and other vegetable oils (Krisna Tuti et al 2004).

4.4 Organoleptic Test

a. Color

Color in a food can be caused by several factors that greatly determine the quality of a food. Color can also attract the attention of consumers so that they can judge or give the impression of liking or disliking a food.

b. Taste

Taste is one of the factors in organoleptic testing. Flavor involves more of the senses of the tongue, a very good taste can attract the attention of consumers. So consumers are more likely to like food than its taste. The taste of food actually consists of three components, namely: smell, taste and mouth stimulation (Rampangan, et al 1985).

Taste is one of the factors that can greatly affect a person's acceptance of a food. Human tastes are very diverse. The variety that can cause the taste of humans is difficult to understand completely. The results of sensory testing on the taste of mangosteen dodol indicated that the product was acceptable by panelists/community.

c. Aroma

Aroma is generally obtained by analyzing the results of the smell. Aroma has a very important role in determining the degree of assessment and quality of a food ingredient, in addition to the shape and color of the smell or aroma will have an effect and become a major concern. Once accepted, the next determination is the taste in addition to the texture (Rubianty and Berty, 1985).

d. Texture

Texture is a very important physical property of food. This has a relationship with the taste at the time of chewing the food, one way to determine the texture of a food is to give a load to the food, for example inspection of the former or by finger pressure (Rampongan et al, 1985)
V. Conclusion

5.1 Conclusion
The conclusions of this study are as follows:
1. The process of making mangosteen dodol consists of several food ingredients, namely: mangosteen flesh, glutinous rice flour, brown sugar, and coconut milk along with water, then heated with fire (75°C) while stirring - Stir until smooth for 2-3 hours.
2. The highest water content and fat content in mangosteen dodol in each treatment was in the treatment of 30% addition of glutinous rice flour + 40% Brown sugar (A1) and the lowest water content and fat content was found in the addition of 50% food ingredients glutinous rice flour + 50% brown sugar (A3).
3. In the color organoleptic test, the best treatment was the addition of food ingredients which was 50% glutinous rice flour + 40% addition of brown sugar (A1). In the aroma organoleptic test, the best treatment was found on the addition of food ingredients 30% glutinous rice flour + 40% addition of brown sugar (A1). In the Organoleptic Test on Taste the best treatment on the addition of 30% Addition of glutinous rice flour + 40% addition of brown sugar (A1). And in the organoleptic test on texture, the best treatment was the addition of 30% glutinous rice flour + 40% addition of brown sugar (A1).
4. The formulation of treatment for the addition of 30% glutinous rice flour from the addition of sugar + 40% is the best treatment formulation for the results in the manufacture of mangosteen dodol.

5.2 Suggestion
In the next study, research was conducted on all treatments with the addition of glutinous rice flour + addition of brown sugar to withstand storage so that the best treatment results for shelf life (more durable).

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