

COMPARISON OF PROXIMAL LEVELS IN PAPAYA JAM ACIDIFICATION AND NON-ACIDIFICATION MEDIA.

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ABSTRACT

This processing aims to extend shelf life as well as increase the uniformity of products and add economic value.

The research method used in this study is quantitative research, which is then analyzed using a statistical test of unpaired T.S.

The results of the study obtained the proximal content of papaya jam non-acidification protein 10.36%, fat 8.05%, carbohydrates 67.75%, ash 17.8%, water 58.44% while in jam acidification in the results of protein 20.96%, fat 3.836, carbohydrates 78.57%, ash 25.6% and water 55.05%. From the results of the statistical test T- unpaired that the value of probability (sig 2-tailed) with the test T is not paired is 0.367. Because the probability value is greater than 0.05, H₀ is received or in the data processing of the two samples does not differ significantly.

Keywords: Papaya Jam, Proximal, Acidification, Non-Acidification

INTRODUCTION

Papaya which has the Latin name *Carica papaya* L, originating from southern Mexico and the northern part of south America, is now widespread and widely grown throughout the tropics, the name papaya in Indonesian taken from the Dutch base "papaja" which was previously taken from the Arawak language "papaya", in Javanese papaya is called "catech" and in Sundanese is called "gedang" another term for papaya In Kalimantan called Banana Malacca, Badas, Manjan for Nusa Tenggara area called Kalujawa, Padu in Sulawesi the name Kapalay, Kaiki, Unti Java and in sumatra area called Peute, Betik, Ralempaya, Punti kayu.

The spread of papaya plants coincided with the portuguese voyage in

the 16th century to various continents and countries, including Africa and Asia, around the 17th century spread on In tropical regions including Indonesia and growing along with the presence of the Netherlands, papaya also includes plants of the family Caricaceae and the genus *Carica*. Genus *Carica* It has approximately 40 species, but only seven species can be consumed, including *Carica papaya* L [17]

Papaya belongs to the group of truly (true) single fruits. A single true fruit is a true fruit consisting of flowers with one fruit only this fruit can contain one or more seeds can also be composed of one or many fruit leaves with one or many shades. In papaya fruit consists of several fruit leaves with one space and many seeds. Papaya also includes buni

fruit (bacca) seeds are found free in the soft part of the papaya including buni fruit that is thick-walled and edible papaya fruit is also round to oblong. [21].

Natural materials have secondary metabolite compounds that have the potential as a secondary metabolite anti-bacterial substance which is a metabolite resulting from secondary metabolic processes. Each organism usually produces a different secondary metabolite compound, perhaps even one type of secondary metabolite compound found in only one species in a kingdom. This compound is also not always produced, but haya in times of need only or in certain phases. [13].

Papaya fruit plants also have a slight branching even none, this plant can grow at a height of 5 to 10 meters, papaya leaves are five with a long stalk with a hollow middle Shape can have a gap or not but usually cultivars have a hoeu in the inside of the fruit form of a round or elongated papaya plant with a tip usually tapered, The color of the fruit is dark green when young and light green to yellow [26].

Papaya fruit (*Carica papaya* L.) is one of the agricultural commodities that are much loved by the people of Indonesia. This fruit contains a lot of vitamin A, B vitamins, vitamin C, minerals and energy and papaya fruit has many antioxidants that are good for health. The content of pectin in papaya fruit causes the elimination of cholesterol from the body in the form of bile acids which resulted in the body using cholesterol in the blood to replace the lost bile acids. [2].

Papaya fruit contains many chemicals that are beneficial for the blood vessels of papaya fruit that act as useful antioxidants and can also prevent the formation of free radicals and lipid peroxidation. [6].

Papaya fruit also contains fiber that can lower cholesterol levels by inhibiting

the enzyme HMG-KoA reductase so that cholesterol synthesis will be inhibited and can bind to bile acids and form micelles that will be excreted through feces, in addition.

Papaya contains sugar as a source of carbon that can be decomposed through the microbial fermentation process [4].

Regular consumption of papaya can help reduce weight, as a worm medicine and sweat for patients entering angina, in innovating the technology of processed papaya fruit that is taken sarinya can be processed in the form of jam, processed products that are often made from these fruits into a type of durable food in the form of cider or fruits that have been destroyed, plus sugar and cooked until thick or half-solid. Jam is not eaten just like that, but to be applied to fresh bread or as the contents of sweet bread.

Test results obtained from the laboratory that showed that papaya juice has a pectin level of about 7 ml. Fruits that have high levels of pectin are good for use in the manufacture of jams [11].

Jam perpotensi as a processed product because jam has a low water content and the presence of sugar and acid so that it can increase the shelf life of jam, jam which is a semi-solid and semi-wet product made from processing fruit pulp, sugar, acid and thickening ingredients, thickening ingredients that can be used in the manufacture of jams such as gelatin flour, caragenan, pectin and cornstarch. [1].

In addition to pectin and sugar, another ingredient that plays a role in the manufacture of jam and marmalade is the presence of a mixer. Acidification is added to obtain a pH in the range of 2.8-3.4 to form a consistent gel, strengthen the taste of the fruit and increase the total value of the acid. [5].

Generally, the acid that is often used is citric acid, in addition to other acid-absorbing citric acid that can be added,

among others, malic acid, lactic acid tartaric acid, fumaric acid or phosphoric acid, and become one of the acidulants that can act as a flavor suppressant and is able to disguise “*after taste*” What you like is citric acid. [25].

Citric acid can also regulate pH in this case lowering pH so as to prevent the active phenolase and can also act as a Cu element slicing in enzymes. The benefits of citric acid in foodstuffs are as a sour, refresher and preservative, when added in foodstuffs, citric acid does not have a maximum limit. Citric acid is an easy-to-find and crystal clear crystal-shaped acid that does not smell with the concentration of citric acid used in the manufacture of jams influenced by the type of fruit and the amount of sugar concentration.

The purpose of adding citric acid to the product is to prevent the crystallization of sugar, give acid flavor to food products, and as a catalyst for hydrolysis of sucrose into the form of invert sugar for during the storage process and also as a gel purifier to be produced.

Other ingredients that can be added in the manufacture of jams are cornstarch, cornstarch which is a homopolymer compound of glucose with α -glycosidic bonding, cornstarch consists of fractions that can separate in hot water into two factions namely the amylose fraction and the amyl pectin fraction. This condition makes cornstarch has the ability to form gels such as pectin so that it can replace the function of pectin as a thickener in the manufacture of jam. [18].

The formation of gels in jams and marmalade is influenced by several factors, including the content of pectin in the material, also due to the concentration of sucrose added, as well as the presence of acid addition of pectin, sucrose and citric acid in certain concentrations will affect physical characteristics such as viscosity and oles power, chemical characteristics such as water content and

the total value of dissolved solids or TPT) and affect consumer acceptance of products [12].

Papaya jam is one of the innovations of processed products from papaya fruit to be able to extend the shelf life of papaya fruit after harvest. The best quality of papaya jam in the study was a combination of the addition of cornstarch 5% and the addition of 40 grams of sugar which resulted in a taste organoleptic test value of 3.90 (likes), aroma 3.77 (like), color 4.04 (like), sugar content of 49.27%, total dissolved solids of 6.25 and ole daya 2.46 (somewhat smooth). [11].

In this study after completion of the manufacture of papaya jam both through acidification media with the addition of citric acid and with non-acidification media, the next step is to know the level of proximate. Proximate analysis is one of the analyses commonly used to test the quality or nutritional content in feed or food raw materials, in proximal nalysis can describe the nutritional content in foods divided into 5 fractions, namely water content, ash content, protein levels, carbohydrate content and fat content. proximate analysis also has advantages such as many laboratories that use the system for research, the cost of analysis is cheaper, produces analysis in outline and can calculate the total digestible nutrient (TDN). Proximal analysis is an analysis that classifies the components contained in food based on their chemical composition and function. Proximal analysis was first developed in Germany.

Proximal analysis is a method whose chemical analysis to identify the content of nutrients such as proteins, carbohydrates, fats and fiber in a food substance from feed or food ingredients. Proximal analysis has benefits as an assessment of the quality of feed or foodstuffs, especially on the standard of food substances that should be contained in it [1].

Proximal analysis methods include ash levels with drying methods according to AOAC 2005, water content with the oven method according to AOAC 2005, fat content with the soxhlet method according to AOAC 2005, protein levels with the kjeldahl method according to AOAC 2005 and carbohydrates by different Here is the proximal fraction. The first water content is the presentation of water content in a material, the moisture content can be certain with wet weight (wet base) or dry weight (fry base). Water content also has a role in the quality of food content in food can determine the acceptance, freshness, and durability of food, the higher the water content in a food, the greater the risk of damage. The function of water is as a medium of transportation of nutrients, regulating body temperature, and balance of blood volume [22].

Ash is an inorganic material obtained after the removal of organic materials in a material, the removal of organic materials in food is done by burning raw materials in food, the calculation of ash levels aims to know whether or not a food is, distinguishing real food and synthesis and as a parameter of an ingredient. Ash levels do not give an important value of ash levels only used for BETN calculations, The higher the ash content, the worse the quality of the food and the ash consists of mineral components whose mineral content in ash content cannot explain the amount and type of minerals contained in it. [9].

Analysis of protein levels used to calculate the protein levels in coarse protein foods is the amount of nitrogen contained in the material multiplied by 6.25, protein is an organic substance that also contains carbon, hydrogen, nitrogen, oxygen and phosphorus. The function of proteins in the body can repair tissues, as the growth of new tissues, or metabolism for energy, metabolism into vital

substances of the body, essential enzymes and also as certain hormones [15].

Fat is all compounds in food ingredients that are soluble in organic solvents, for example organic solvents include ether, petroleum, ether and chloroform, fat also serves to increase nutritional value and also calories, provide energy, vitamin solvents, and provide savory taste to food ingredients, also save the use of protein in protein synthesis, as a lubricant in the digestive tract, It also serves as maintaining body temperature.

There is sensory analysis that becomes one of the organoleptic tests where this test is the function of assessing a product, with the control of the five senses, panelists are people or groups that give assessments of a product, divided into five individual panelists, there are also limited panelists, trained panelists (7-15 people), half-trained panelists (15-25 people) and untrained panelists (25 people). Some factors that must be considered in carrying out organoleptic tests are physiology (physical state of the panelist), psychological (feeling of panelists) and environmental conditions during testing, in the implementation of hedonic tests where untrained panelists are asked to provide assessments on a scale that shows the level from very dislike to fondness for taste response. While the panelists who are half trained give assessments ranging from very non-inflated levels once to very inflated once for the response of the ability to expand. [5].

Organoleptic assessment which is also called sensory assessment or sensory assessment is a way of assessment that has long been known and is still very commonly used, this method of assessment is also widely used because it can be carried out quickly and directly in some ways assessment with the senses even have better accuracy than with the most sensitive measuring instruments, the application Organoleptic assessment in

practice is called organoleptic testing performed using certain procedures that will be able to produce further analytical data using statistical methods. [20].

The score test serves to assess a specific organoleptic nature and in addition the score test can be used to assess the hedonic nature or hedonic quality traits, in the test the score is given an assessment of sensory quality in a quality level whose purpose this test is to give a certain value or score to a quality characteristic, the giving of the score can be associated with the hedonic scale whose scale depends on the desired class level. In the test the parameters that can characterize the product with attributes / characteristics / cryuator / terminology with the selection of sensory attributes and their limitations are associated with chemical properties for flavor, taste and smell, while for texture and appearance associated with physical properties. Where an understanding of the rheological and chemical properties of the product makes it easy for the preparation of inscriptions and data to be interpreted and useful in the determination of decisions in a product.

As for the conditions that must be in the organoleptic test are examples (samples), the presence of panelists, and honest response statements, in the assessment of food properties that determine whether or not a product is accepted or not is its sensory nature, in organoleptic tests must be done carefully because it has advantages and disadvantages, organoleptic tests have high relevance to the quality of the product because it is directly related to consumer tastes, In addition, this method is quite easy and fast to do with the results of measurements and observations are also quickly obtained so that organoleptic tests can help the analysis in an effort to It can increase production or marketing. [8].

The assessment description is obtained from organoleptics shared with respondents, which organoleptic itself is the scope of food ingredients consisting of color, aroma, texture, and taste, respondents themselves are divided into three parts, namely expert respondents, which are included in expert respondents, namely respondents who are experts or know a lot in terms of food. [23].

From the description test used to identify the importance of a product and provide information about the intensity of the characteristics of the product, this test relates directly to certain sensory characteristics of the product this information can be used for the development of new products, improve products or processes and is useful also for routine quality control.

In the flavor test is done to decipher the characteristics of the aroma and flavor of food products, decipher the characteristics of food texture, this test can be used to describe completely a food product looking at the difference in examples that exist between groups, perform special identification for example off-flavor and show changes in intensity and certain qualities, the test stage includes the analysis stage..

Based on this, researchers are interested in conducting research related to The Comparison of Proximal Levels in Selei Papaya Orange Media Acidification and Non-Acidification.

RESEARCH METHODS

The approach of this research is quantitative, with the research design used is experimental research and also uses quasi-experimental methods or pseudo-experiments, where the research provides treatment with measurements of impact and experimental units, but does not use random placement in the process. create a comparison for each inferring of a change in the A treatment. The research design

used is Two group comparison posttest design in this design observation is carried out as much as 1 time, namely after treatment, there are 2 groups that are compared, namely the comparison group of proximal levels in papaya cells orns acidification media with proximal levels in selei papaya orns non-acidification media..

This research was conducted in 2 different research places, namely Chemical laboratories on the campus of Bina Mandiri Gorontalo University and The Chemistry Laboratory of Gorontalo State University, The Chemistry Laboratory of Bina Mandiri Gorontalo University is a Laboratory that students use to practice or as a research place for final semester students. The situation in the laboratory is also very closely guarded Because many very dangerous chemicals are carried out carefully, the use of tools and materials in the laboratory must also always be under supervision from the campus so that things do not happen that are not desirable.

Comparative testing of proximal levels such as protein, fat, carbohydrate levels was conducted at the Chemical Laboratorium of Gorontalo State University, while for the use of water cada and ash levels were tested in the Chemistry Laboratory of Bina Mandiri University Gorontalo, due to the limitations of the tools in the Chemistry Laboratory of Bina Mandiri University. then for some testing is done in other campus laboratories testing is done such as testing protein levels, fat levels, and carbohydrate levels.

The type of data used in the form of testing in the laboratory with the data source obtained directly from testing conducted in the laboratory, for the population is papaya fruit (*Carica papaya* L.) with samples obtained randomly until it meets criteria that are good enough to be used in research, papaya used must be

completely mature according from the growing age to the ready age. Acidification jam is a processed jam with the addition of citric acid. Citric acid is an ingredient that is able to reduce pH so that it can inhibit the growth of bacteria.

Non-acidifying jam is the result of processed papaya fruit porridge that is crushed which is then added with sugar and cooked until thick or half-solid. Research variables are the subjects and objects targeted by the study in this study that are free variables are papaya jam with acidification and non-acidification media, and the dependent or bound variable in this study is the proximal level in papaya jam.

The tools used in this study include scales, knives, cutting boards, measuring cups, stirrers, gas stove thermometers, large frying pans, sotels, knives, blenders, spoons, basins, scales, jam bottles while the tools used in proximate tests are water jets, spinners, hand sealers, knives and stainless steel pans, gauze, scales.

The materials used in this study include: ripe papaya fruit, water, granulated sugar, citric acid 0.2%, cornstarch 5%. While the materials used for proximal analysis are buffer solution, NAOH 0.313 N, H₂SO₄ 0.225N, K₂SO₄ 10%, boiling stones, anti-fruit substances, aquedades and 95% alcohol.

With the data collection technique using the preparation of ingredients and the manufacture of porridge from papaya fruit where the raw material of jam in the form of papaya fruit is sorted first in order to get good jam results, papaya fruit is selected that is ripe with the characteristics of half-yellowing fruit skin and meat is not too soft, which is washed with running water and then papaya fruit peeled skin, And fruit meat is used for the manufacture of jam. Papaya fruit cut into small pieces first In the past, it is useful to facilitate the process of destruction, each fruit is crushed using a blender tool which

is then added water 1:1 so that porridge is obtained from papaya fruit, then fruit porridge is weighed according to treatment. Papaya also contains flavonoid compounds, saponins, tannins, and alkaloids according to the results of phytochemical tests conducted by the authors it can be known that papaya fruit contains alkaloid compounds, flavonoids, tannins, phenols, and calcons. Mixed jam making refers to slightly modifiable use of different raw materials of papaya fruit, fruit pulp is heated at 70 ° C in a saucepan with the addition of 40% granulated sugar, citric acid 0.2% for 10 minutes. The cooking process is stopped by doing a spoon test. Spoon test serves to determine the end point of cooking, how to dip the spoon into the dough, if the dough does not melt immediately after the spoon is lifted then cooking is enough. After papaya jam is carried out proxy test, proximal analysis is an analysis that classifies the components contained in food based on its chemical composition and function, making jam using acidification and non-acidification media. [14].

Making mixed jam with a little modification using different raw materials papaya fruit, fruit pulp heated at 70 ° C in a saucepan with the addition of 40% granulated sugar, cornstarch 5% for 10 minutes. The cooking process is stopped by doing a spoon test. Spoon test serves to determine the end point of cooking, how to dip a spoon into the dough. If the dough does not melt immediately after the spoon is lifted then cooking is enough [11].

After the papaya jam is carried out a proximal test, proximal analysis is an analysis that classifies the components contained in food based on its chemical composition and function. Proximal analysis consists of 5 fractions namely water content, ash, coarse protein, coarse fat and BETN (extract ingredient without nitrogen) [10].

Proximal analysis is a method that chemically analyzes to identify the content of nutrients such as proteins, carbohydrates, fats and fiber in a food substance from feed or food ingredients. Proximal analysis has benefits as an assessment of the quality of feed or foodstuffs, especially on the standard of food substances that should be contained in it [1].

In the method of proxy analysis is checked the water content where the sample is weighed as much as 5 grams and put in a porcelain cup that has been known to weigh, before the porcelain cup is used first dried in the oven at a temperature of about 100 oC for 10 minutes the cup that has contained the material is then dried in the oven at a temperature of 100o C for 3 hours then cooled in a decikator for about 20 minutes and weighed. Then the sample and the cup are reheated in the oven for 30 minutes and refrigerated again in a decikator and then weighed repeatedly until a constant weight is obtained (the difference in consecutive weighings is small from 0.2 mg). water content (%) is weighed by the formula:

$$\frac{\text{weight of the starting material} - \text{weight of the final material}}{\text{weight of the starting material}} \times 100\%$$

There is an ash test in which a sample weighed as much as 5 grams is inserted a porcelain cup that has been known to weigh (before use, porcelain cups are also first dried in the oven at a temperature of approximately 100 o C for approximately ± 10 minutes). The sample and cup are then noted in a furnace with a temperature of 600 o C until whitened ash is obtained, which is then cooled in a decikator for 30 minutes, after the cold is weighed and calculated ash levels using the formula :

$$\frac{\text{weight of ash (g)}}{\text{sample weight (g)}} \times 100\%$$

Furthermore, testing protein levels using protein level analysis using lowry method is by diluting curd with aquadest, preparing liquid samples, adding biurets, incubating and reading scales on Boehringer Photometer with wavelengths of 546-550 nm. Analysis of total acid levels using the Alkalimeter method by diluting the curd with aquadest, adding a solution of phenoptaline, filling the burette with NaOH and reading the initial miniscult until the solution is pink with the formula:

$$\text{until N (\%)} = \frac{(ml\ HCL - ml\ blanko) \times 0,02 \times 14,007 \times 100\ \%}{sample\ weight \times 1000}$$

Protein up to (%) = % N x 6,25

Fat is also one of the tested using the Soxhlet method (AOAC, 2005), the first is done dioven filter paper for 24 hours at a temperature of 60o C and fat squash for 30 minutes at a temperature of 100 - 105o C, after the filter paper is heated in the oven then the filter paper is cooled for 15 minutes in the activator and weighs 1 gram of sample and filter paper as heavy (A). Weigh 1 gram of sample with filter paper as weight (B). dry in the oven to 60o C for 24 hours. Cool in an exfoliator for 15 minutes and weigh as heavy (C). extras for 5-6 hours, then dry in the oven at 60o C for 24 hours. Cool in the initiator for 15 minutes and weigh as weight (D) with the formula used:

$$(\%) fat\ content = \frac{C - D}{B - A} \times 100\ \%$$

Description:

A = weight of filter paper (g)

B = weight of filter paper and sample (g)

C=weight of filter paper and sample after dioven (g)

D=weight of filter paper and sample after in soxhlet (g)

Another test is carbohydrates using the method by Luft Schrool Method by difference is a method to analyze carbohydrate levels by reducing 100% of the total value of water content, ash content, protein levels, fat content with the formula [24] :

100 - (moisture content + ash content + protein content + fat content)

Data analysis techniques using quantitatif, quantitative data is data from research results that are structured or patterned so that the data obtained from sources is easier to read the selection of quantitative data in data collection techniques because it is more structured and commonly measured by numbers and graphs.

For the final result if the resulting data is normal distribution then used methods with statistical tests of unpaired T-100, the results of this test are used to see the comparison of proximal levels in selei papaya orens acidification media with proximal levels in selei papaya orens medium non-acidificationtaraf that researchers use is $\alpha = 0.05$, with guidelines in accepting the hypothesis if the value $P < 0.05$ then H_0 is rejected, and the value $P > 0.05$ then H_0 is accepted and the results of the obtained data are presented in table form.

RESEARCH RESULTS

Table 1 Comparative Analysis of Proximal Levels in Papaya Jam Acidification and Non-Acidification Media

SAMPLE	PROTEIN	FAT	CARBOHYDRATES	WATER	ASH
ACIDIFICATION JAM	20,96 %	3,836 %	78,57 %	55,05 %	17,8 %
NON-ACIDIFICATION JAM	10,36 %	8,05 %	67,75 %	58,44 %	25,6 %

Sumber: Primer, 2021

Tabel 2 Proxy Statistical Testing on Papaya Jam Acidification and Non-Acidification Media

PROXIMAL INDICATOTOR	JAM		TEST RESULT S (sig 2-tailed)
	Acidification Media	Non-Acidification Media	
Protein levels	20,96	10,36	
Fat content	3,836	8,05	
Carbohydrate levels	78,57	67,75	0,05
Ash levels	25,6	17,8	
Water content	55,05	58,44	

Sumber: Primer, 2021

DISCUSSION

From the table above can be seen the comparison of the results of the two samples, from 5 tests on papaya jam in acidification and non-acidification obtained the result that in jam acidification has higher proximal levels than non-acidification in the protein content of acidification jam greater 20.96% compared to non-acidification, when viewed in SNI standards of foodstuffs then the results of research are less than the SNI standard which is 25%. The results of this study are similar to the results of other studies that show that the addition of citric acid can also produce higher protein levels of 39.65%.

In addition to the nutritional content of papaya also contains phytochemical compounds, namely, carotenoids, carotenoid pigments contained in this fruit is a red lycopene, therefore papaya with yellow does not contain lycopene papaya fruit is also useful and helps accelerate wound healing and digestion.

In the table seen the content of non-acidification fat greater than 8.05% than acidification, this is due to the process of making non-same-acid jams that are longer cooking than acidification with the result of fat content both in non-acidification jams and also acidification does not exceed the food quality standard of 30%.

The frying process is food processing using high temperatures above 160 ° C that can reduce fat content and damage vitamins and minerals, the weight of food after processing generally decreases all the decrease in this weight value because the process of heat administration causes a reduction in components that can easily evaporate (volatile).

Dry processing (frying and roasting) can reduce the weight of fresh food more than wet processing (steaming and boiling), this is because in wet processing the

temperature used is 90 ° C – 100C while in dry processing the temperature used is more than 100 ° C [25].

The results of this study are in line with other studies obtained by the results of fat levels of fried foods there was a significant increase compared to fat levels at the time of boiling..

In the table of carbohydrate content in acidification jams of 78.57 greater than the carbohydrate content in non-acidification jams, this is due to the process of making non-acidification jams longer fried than jam with acidification, the results of good carbohydrate content in non-acidification jams and acidification jams do not exceed the standard food quality requirement of 80%.

Carbohydrates are natural products that have many important functions in plants and animals, which through photosynthetics, plants convert carbon dioxide into carbohydrates in the form of cellulose, starch, and sugar. Carbohydrates in flour consist of carbohydrates in the form of simple sugars, pentose, dextrin, cellulose, and starch, most of carbohydrates mainly in monosaccharide and disaccharide groups carbohydrates such as glucose, fructose, galactose, and lactose have reduced properties, the reducing properties of carbohydrates are caused by the presence of aldehyde groups or free ketone groups and also free -OH groups [3].

The results of this study have the same results as other researchers with the results of measuring total carbohydrates below the Indonesian national standard of 13.89%. [16].

In the table above can be seen the result of ash content of acidification jam higher level of 25.6% compared to non-acidification jam, ash content is defined as residue produced in the process of burning organic matter at a temperature of 5500 C in the form of inorganic compounds in the form of oxides, salts and minerals. The

total ash contained in food products is severely limited in number, the total ash content is critical (According to SNI the requirement is max. 0.1%). The high total ash content in materials and food products indicates the potential for high levels of metallic elements in food ingredients or products. The insoluble ash content in acids that are high enough indicates the presence of sand or other impurities.

Analysis of ash and minerals can find out the nutritional quality of a food, but it can also know the level of purity of the product, the presence of counterfeiting in jam products, cider and vinegar, the success rate of an ingredient, and the occurrence of toxic mineral contamination [27].

The results of this study have the same results as other researchers with the results obtained, namely the results of ash levels exceed the Indonesian National standard of 33.8% [7].

Based on the table above it can be seen that the water content in non-acidification jam is higher with the amount of 58.44% compared to the acidification jam, this is due to a fairly high increase in the jam porridge, the more papaya fruit porridge used, the more water produced. According to SNI standard 3746:2008, where the quality standard of jam that meets is 35%, but in the results of this study obtained the results of this level have exceeded the standard of SNI (Indonesian National Standard).

Water content is also one of the very important characteristics of food, because in water can affect the appearance, texture and taste of food, water content in food also determines the freshness and durability of these foodstuffs, high water content results in easy bacteria, food and also weed to multiply, so that changes in foodstuffs will occur [25].

The results of this study have results that are not the same as other researchers

whose results obtained water content results in pepada jam exceeded the Indonesian national standard that has been set at 35.17%. [19].

Based on the table it is seen that the value of probability (sig 2-tailed) with unpaired T test is 0.367. Because the probability value is greater than the 0.05 H0 meal received or on data processing the two samples did not differ significantly.

CONCLUSION

After conducting research on "Comparison of Proxy Levels in Papaya Jam Orens Media Acidification and Non-Acidification in 2021", then the author can conclude as follows:

- A. In acidification media jam obtained proxy levels consisting of protein levels of 20.96%, fat content by 3.836%, carbohydrate content by 78.57%, ash content by 25.6%, and water content by 55.05%.
- B. In non-acidification media jam obtained proximal levels consisting of protein content of 10.36%, fat content by 8.05%, carbohydrate content by 67.75%, ash content by 17.8%, and water content by 58.44%.
- C. There is a difference in the average proximal content in non-acidification media of orange papaya jam compared to papaya orange jam acidification media

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