

# Identification Of Vitamin A Content Of Moringa Wet Noodles With Various Boiling Times

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**Abstract-** Wet Noodle Moringa oleifera leaves are food products made from the primary raw material of flour with the addition of leaf extract Moringa oleifera after the noodles are printed in the form of noodles, then the boiling process with a variety of time against the wet noodles is the most preferred by panelists. The purpose of this study was to identify vitamin A content in moringa leaf noodles with a variety of boiling time. This research method is experimental. The organoleptic assessment was carried out by 45 trained panelists. After getting the noodles, the panelists liked the most, followed by boiling wet noodles with 2, 4 and 6 minutes. Analysis of the results of organoleptic tests using Kruskal Wallis Test ( $p < 0.05$ ) then continued with the Whitney Mann Test. The results of this study found that panelists found it difficult to distinguish the concentration of wet noodles, but when viewed from the average results, panelists preferred wet noodles with a concentration of 30%. Then proceed with the boiling process of wet noodles and obtained three results that the content of wet vitamin A mi is below 30.77 mcg / 100 grams. It is expected that the general public can know this moringa leaf wet noodle product besides that due to the low content of vitamin A in wet noodles, it is also suggested that people consume additional sources of vitamin A from other sources of food.

**Keywords:** *Moringa Leaves, Wet Noodles, Organoleptic Test, Vitamin A*

## I. INTRODUCTION

Noodles are one type of processed food product that is hugely preferred by the people of Indonesia. One type of noodle is wet noodles. Wet noodles are a type of noodle that has a moisture content of 52% so that the shelf life is relatively short, which is 40 hours at room temperature which undergoes boiling after the cutting stage and before being marketed <sup>(1)</sup>. Noodle is preferred because of its practical and fast presentation, both as additional food and as a substitute for staple food <sup>(2)</sup>.

Based on the 2013 Basic Health Research (RISKESDAS) data report, the average Indonesian population consumes 3.8% of wet noodles. Whereas in Bengkulu province the number of people who consumed wet noodles was 2.5% <sup>(3)</sup>. The content of nutrients in 100 grams of wet noodles is 86 kcal energy, 0.6 g protein, fat.

3.3 g, carbohydrate 14 g, calcium 14 mg, phosphorus 13 mg, iron 0.8 mg, and vitamin A 0 RE <sup>(4)</sup>.

The low content of vitamin A in wet noodles, it is necessary to add food ingredients from vegetables that are high in vitamin A, one of which is Moringa Leaves. Food processing using the cooking process generally results in a decrease in the chemical composition and nutrients of foodstuffs such as water content, ash content, protein content, and fat content. The high or low decrease in the nutrient content of food due to cooking depends on the type of food, the temperature used <sup>(5)</sup>. So the authors are interested in doing research making wet noodles which are added with Moringa leaf extract and then analyzing the content of wet noodles that have been boiled with various boiling times.

## II. METHODS

This research is an experimental or experimental experiment (*Experiment Research*). Experiments in this study in the form of 1 treatment that is testing the vitamin A content in wet noodles most preferred by panelists from the concentration of wet noodles, namely Formula 0 (formula control), Formula 1 (Addition of Moringa leaf extract 10%), Formula 2 (Addition of Moringa leaf extract 20 %), Formula 3 (Addition of Moringa leaf extract 30%), with boiling time of 2 minutes, 4 minutes and 6 minutes. The study was conducted from March 22 to May 14, 2018. You are using 45 somewhat trained panelists, students of the Department of Health of the Department of Health of the Ministry of Health of the Republic of Indonesia.

The equipment used in this study is; tool in making Moringa leaf extract is a basin, blender, stainless bowl; the tools for making wet noodles are stoves, pans, analytic scales, basins, measuring cups, blenders, stainless bowls, sticks, napkins, and amp; tools in organoleptic test are organoleptic test forms, small plates, small spoons, labels, trays.

Ingredients used: Wheat flour as much as 300 grams per formula, Moringa leaf extract (F0: 0 ml, F1: 19 ml, F2: 38 ml, F3: 57 ml), cooking oil 10 ml each formula, 1 chicken egg per formula, 10 grams of salt per formula, 20 grams of sago flour per formula, 80 ml of water per formula.

**III. RESULT**

Table 1 shows the results of the test. *Crucible Wallist* is known that the addition of Moringa leaf concentration to wet noodles significantly affected the color of wet noodles with a value of  $p = 0,000$  ( $p < 0.05$ ). So it continued with the test *Mann Whitney* where the most significant color attributes are formula 0 with formula 2, formula 0 with formula 3 and formula 1 with formula 3. While the average value the most chosen by panelists is formula 2 (20% concentration).

**Table 1. Kruskal Wallis and Mann Whitney Test Results on Color Attributes of Wet Noodles Wet Noodle**

Formula	Mode	Mean Value	Test Kruskal Wallis	Test Mann Whitney
Formula 0	3	2.62	0.000	a
Formula 1	3	2.64		a
Formula 2	4	3.42		b
Formula 3	4	3.24		a

Table 2 shows the results of the test, it was *Crucifice Wallis* found that the addition of Moringa leaf concentration to wet noodles significantly affected the aroma of wet noodles with a value of  $p = 0.006$  ( $p < 0.05$ ). So it continued with the test *Mann Whitney*. This means the panelists can distinguish the aroma of moringa leaf noodles with variations in concentration of Moringa leaf extract, where the most significant aroma effect is formula 0 with formula 1, formula 0 with formula 3 and formula 1 with formula 3.

**Table 2. Test Results Kruskal Wallis and Mann Whitney on the Attribute Aroma of Wet Noodles Wet Noodle**

Formula	Mode	Value Mean	Test Kruskal Wallis	Test Mann Whitney
Formula 0	3	2.87	0.006	a
Formula 1	3	3.36		b
Formula 2	3	3.24		a
Formula 3	3	3, 53		b

Table 3 shows the result of a test, it is *Krallall Wallis* known that the addition of Moringa leaf concentration to wet noodles did not significantly influence the wet noodle taste with  $p$ -value = 0.332 ( $p > 0.05$ ). This means that the panelists cannot distinguish the taste of wet noodles. Moringa leaves with variations in Moringa leaf extract concentration.

**IV. DISCUSSION**

**The color of Moringa Leaf Wet Noodle**

Color is the first assessment indicator seen by panelists because of the color using the sense of sight <sup>(6)</sup>. Besides that, the color and appearance of beautiful food will cause appetite, so that is a special attraction for someone to taste the food <sup>(7)</sup>.

**Table 3. Kruskal Wallis Test Results on Flavor Attributes of Wet Noodles Wet Noodle**

Formula	Mode	Value Mean Mean	Test Kruskal Wallis
Formula 0	4	2.89	0.332
Formula 1	2	2.84	
Formula 2	3	3.02	
Formula 3	4	3.20	

Table 4 shows test results *Krallall Wallis* revealed that the addition of Moringa leaf concentration to wet noodles did not significantly influence the texture of wet noodles with a value of  $p = 0.064$  ( $p > 0.05$ ). This means that the panelists could not distinguish the texture of moringa leaf noodles with various concentrations — Moringa leaf extract.

**Table 4. Kruskal Wallis Test Results In the Attributes of Wet Noodle Texture Moringa Leaf Wet Noodle**

Formula	Mode	Value Mean	Test Kruskal Wallis
Formula 0	3	2.84	0.064
Formula 1	3	2.93	
Formula 2	4	3.13	
Formula 3	3	3.33	

Table 5 shows the most preferred wet noodles by 45 panelists are formula three wet noodles with a concentration of 30%, then the next is to analyze the vitamin A content in wet noodles with a concentration of 30%. Before the analysis is done, the wet noodles are boiled first with three cooking time variations, the first is boiled with 2 minutes, the second is boiled with 4 minutes, and the third is boiled with 6 minutes. The results obtained are no decrease in vitamin A content of wet noodles with a variety of boiling time.

**Table 5. Results of Analysis of Vitamin A Wet Noodle Moringa After Boiling Process**

When Boiling Moringa Leaf Noodles	Contents of Vitamin A Unit (mcg / 100g)
2 minutes	<30.77
4 minutes	<30.77
6 minutes	<30.77

Source: Data Results of Analysis of Vitamin A, 2018

The color shown in wet noodles added with Moringa leaf extract is green noodles because the primary color of Moringa leaves green. The level of greenness that looks different for each concentration. The more concentration added to thee, the more green the wet noodles will become. Panelists indicate this can distinguish the type of concentration on moringa leaf noodles.

This research is in line with the research of Kruger *et al.* in Trisnawati and Nisa (2015) The more concentration added; it will produce a thick green color that tends to be dark <sup>(8)</sup>.

Based on the research of a material that is considered nutritious, tasty, and the texture is perfect it will not be eaten if it has an ugly color or gives the impression that it has deviated from the right color. Acceptance of a foodstuff color differs depending on natural factors, geographic, and other aspects of the society receiver <sup>(9)</sup>.

### **Flavor of Moringa Leaf Wet Noodle**

Aroma is a component of odor caused by a product identified by the sense of smell <sup>(6)</sup>. In general, the smell that is received by the nose and brain more is a variety of herbs or a mixture of four main scents, namely fragrant, sour, rancid, and charred <sup>(9)</sup>. In general, the underlying aroma of Moringa leaves is languish and slightly stinging, but in this study, the wet noodles of Moringa leave the panelists did not feel any.

Based on the results of organoleptic tests the aroma of Moringa leaf wet noodles that most preferred by panelists is formula 3, namely a concentration of 30% with the addition of Moringa leaf extract which is 37.8% as many as 17 panelists. Based on the statistical test, the panelists can distinguish the aroma of wet noodles added with the concentration of Moringa leaf extract.

Various studies found that the higher the addition of Moringa leaf flour, the organoleptic aroma decreases. This is different from the research that has been done; this difference is suspected that the panelists are still not familiar with the aroma of Moringa leaf flour that is too dominant in biscuits. However, in this study panelists found that they preferred the taste of wet noodles with the addition of Moringa leaf extract by 30% <sup>(10)</sup>.

### **Taste of Moringa Leaf Wet Noodle**

Taste is an essential sensory component because panelists tend to like foods with good taste <sup>(6)</sup>. The taste is different from the aroma where the taste more involves the five senses of the tongue. Sensing *cecapan* can be divided into four main fronts, namely salty, sour, sweet and bitter <sup>(9)</sup>.

Based on the results of panelist statistical tests, there was no significant effect on the taste of moringa wet noodles with variations in the concentration of Moringa leaf extract, but based on the results of organoleptic tests the most frequently chosen noodles were wet noodles with a concentration of 30% of 42.2% as many as 19 people panelist.

This is not in line with the research of Trisnawati and Nisa (2015) entitled about the effect of adding Moringa leaf protein and carrageenan concentrate on the quality of mocaf substituted dry noodles where the decrease in flavor is thought to be caused by the pungent aroma found in Moringa leaves. It causes a decrease in taste in noodles. However, there is a slight difference in this study that the panelists did not feel the feeling of nausea caused by the taste of wet noodles covered by the taste of onion seasoning

<sup>(8)</sup>.

Things that can affect the taste of one of them is there is interaction with other flavor components, in this case, the taste of moringa wet noodles has not felt directly

moreover, has been covered by the scent of onions during the process of sautéing the wet noodles of Moringa leaves <sup>(9)</sup>.

### **The texture of Moringa Leaf Wet Noodle**

According to Mulyadi, *et al.* (2014) Texture is to know the elasticity of wet noodles, and one of the attributes used in assessing organoleptic in the Moringa leaf's wet noodles is texture <sup>(9)</sup>. Based on the results of the organoleptic test, the texture of wet noodles which was chosen most by panelists was wet noodles with formula 2 with a concentration of 20% of Moringa leaf extract, which amounted to 42.2% as many as 19 panelists.

Based on the panelists' assessment, the average wet noodles added with moringa leaves have a texture that tends to be soft and sticky. This is based on the role of sago in the noodle dough printing process, so that when the boiled noodles are wet, there is still sago on the wet noodles. Sago is often referred to as starch because when mixed with hot water it will become like glue <sup>(7)</sup>

The texture and consistency of an ingredient will affect the flavor caused by the ingredient. From the studies carried out obtained changes in the texture or viscosity of the material changes the taste and odor that arises because it can affect the speed of arousal arising from olfactory receptor cells and salivary glands <sup>(9)</sup>

### **The content of Vitamin A**

Based on the analysis of vitamin A content in the wet noodles of Moringa leaves, the results showed that in the three variations of boiling time the wet noodles of moringa leaves were below 30.77 mcg, which means that the content of vitamin A in moringa leaves noodles was only slightly.

The low content of boiled moringa leaf noodles that have been boiled is thought to be due to several things, one of which is wet noodles through the boiling process with three kinds of boiling time, the first is two minutes, the second is four minutes, and the third is six minutes, where vitamin A is easily oxidized, especially if exposed to air and heat <sup>(9)</sup>.

Boiling is one method of food processing. Boiling includes cooking food in hot water, the temperature of which is kept below its boiling point <sup>(11)</sup>. The effect of cooking on the antioxidant content of vegetables is mainly due to softening or denaturation of plant tissues or cellular disorders and the separation of several phenolic compounds from cellular structures <sup>(12)</sup>.

The low content of vitamin A in moringa leaves of moringa leaves is also suspected because of several elements according to Otten *et al.* (2006); Gibney *et al* (2009) in Putri (2014) namely; Physical changes in foodstuffs are generally caused by the influence of changes in the environment in which the food is stored.

Physical changes in foodstuffs are indicated by changes in water content and pH of foodstuffs and defects in these foodstuffs. Considering that the wet noodles of moringa leaves that are sent are already boiled, physical changes in food can be caused by changes in the temperature and pH of the environment where food is stored. Besides, the mechanism of storage and improper handling can also cause changes to the physical material of food.

The low content of vitamin A in wet noodles is also suspected because in the process of taking the solvent Moringa leaf extract used is water. This is based on research

conducted by Suryani et al. (2015) that matoa leaf extract with acetone solvent has the highest antioxidant activity compared to matoa leaf extract with methanol, ethanol, water, and isopropanol. According to Harbone in Suryani et al. (2015), there are secondary metabolites that are readily soluble in acetone solvents such as chlorophyll and some polyphenol compounds<sup>(13)</sup>.

#### V. CONCLUSION

Based on the results of sensory tests on the attributes of color, aroma, taste, and texture, in general, panelists found it difficult to distinguish the addition concentration of Moringa leaf extract. Overall moringa leaf noodles boiled with three cooking time variations have vitamin A content less than 30.77 mcg / 100 grams.

It is expected that Moringa leaf wet noodle products can be known by the broader community so that people can take advantage of Moringa leaves with the greatest possible extent and can be used as a business opportunity that has the advantage of having a vitamin A content in wet noodles even if only slightly. For further research, it is necessary to measure the initial dose of vitamin A in moringa leaves to find out how many kelor leaves are lost after boiling. The low content of vitamin A in moringa leaf wet noodles is also expected to consume additional sources of vitamin A from other vegetables.

#### REFERENCES

- 1) Astawan, M. 2008. *Making noodles and vermicelli*. Mold 11. Jakarta. Self-helpers.
- 2) Rosida, DA, G. Sargiman, R. Widodo, and MS Sari. 2013. Quality and Consumer Passion towards Wet Noodles Made from Canna Flour and Wheat Flour at Various Levels of Treatment. *Agroknow Journal* 1 (1): 13-19.
- 3) Ministry of Health. 2013. Basic Health Research. Health Ministry's Research and Development Agency for Health.
- 4) PERSAGI. DKBM. 2007. List of Food Composition. Jakarta.
- 5) Sundari, D., Almasyhuri and A. Lamid. 2015. Effect of Protein Cooking Process. *Litbangkes Media* 25 (4): 235-242.
- 6) Mulyadi, AF, S. Wijana, IA Dewi and WI Putri. 2014. Organoleptic Characteristics of Yellow Sweet Potato Dry Noodle Products (*Ipomoea Batatas*) (Study of Egg Addition and CMC). *Study of making dry noodles*. National Seminar of West Lampung PTN BKS, August 19-21, 2014.
- 7) Faridah, A., Kasmita, S., Asmar, Y., Liswanti., Y. 2008. Patiseri Volume 1. Directorate of Vocational School Development. Ministry of Education.
- 8) Trisnawati, M., FC Nisa. 2015. Effect of Addition of Protein Concentrate to Moringa and Carrageenan Leaves to the Quality of Mocaf Substituted Dry Noodles. *Journal of Food and Agroindustry* 3 (1): 237-247.
- 9) Winarno, FG 2008. *Food and Nutrition Chemicals*. Latest edition. Jakarta. Gramedia Main Library
- 10) Suarti, B., Evan A., Masyhura. 2015. Addition of Moringa Leaf Flour and Length of Grilling to the Quality of Biscuits from Mocaf (Modified Cassava Flour). *Agrium* ISSN 0852-1077 (Print) ISSN 2442-7306 (Online) October 2015 Volume 19 (3).
- 11) Michael, E and J Lean. 2013. *Food, Nutrition and Health Sciences*. First Print. Yogyakarta. Pelajar.Library
- 12) Ramdhan, T. and Aminah, S. 2014. Effect of Vegetables on Antioxidant Content. *Urban Agricultural Bulletin* 4 (2): 7-13.
- 13) Suryani, NC Dea, GMP Anom, J. Effect of solvent type on total flavonoid content and antioxidant activity of matoa leaf extract. Faculty of Agricultural Technology, Udayana University. 2015