

Sensory Evaluation Of Wet Noodle Products Added With Moringa Oleifera Flour With Different Concentrations

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Abstract

Noodles are foods that are often consumed by the community as a substitute for rice carbohydrates. Generally, noodles are only made from wheat flour which only has a carbohydrate source. Nutritional needs are not only carbohydrates but also fats and proteins and mineral groups. The purpose of this study was to determine the sensory properties of wet noodle products added with Moringa oleifera leaf flour with various concentrations. The concentration of Moringa oleifera flour compared to wheat flour used in making wet noodles was 0%:100%, 5%:95%, 10%:90%, and 15%:85%. The analytical parameters used are taste, color, aroma, and texture. The panelists used were untrained panelists. Panelists were asked to analyze the hedonic test on the sample of wet noodles served. The results showed that the concentration of Moringa oleifera leaf flour and wheat flour had an influence on the hedonic level of each parameter in wet noodles. Overall, the best organoleptic value for wet noodles added with Moringa oleifera leaf flour was 5% and wheat flour 95% which had an average hedonic level of 103.06 colors, 102.34 aromas, 103.63 taste, and 100.71 on texture. While the lowest hedonic value was in the ratio of Moringa oleifera leaf flour and wheat flour of 15%:85% with hedonic results 32.09 colors, 29.44 aromas, 29.89 taste, and 38.37 in texture. So it can be concluded that Moringa oleifera leaf flour is good in organoleptic substitution by 5%. Similar studies are needed with different or smaller concentrations of Moringa oleifera leaf powder.

Keywords : Noodles, Moringa oleifera, Hedonic Test, Sensory

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Introduction

Processed flour products that are very popular with the community are noodles which are usually used as a substitute for rice as the main food. The advantage of instant noodles, in general, is that it is easy to serve with a delicious taste and practical in serving. In addition, it also has an affordable price and a longer shelf life (Ebtihal et al., 2019). Consumption of foods that are low in protein is inappropriate, or even not balanced by the addition of vegetables or groups of plant materials. This is related to the nutritional needs that cannot be met only from one type of food or one type of nutrition (Susilowati and Rizal, 2017).

Noodle products are currently experiencing development, especially the variation of the mixture used. The manufacture of noodles can add vegetables, tubers, or legumes whose purpose is to improve the nutritional status of the noodle product. Noodles generally have low fat and sodium content but have a high carbohydrate content. Not only noodles, products that are high in carbohydrates are also found in potatoes, corn, or soybean flour (Olorunsogo et al., 2019).

Nutrient needs in noodles will be better and increase if the noodle processing is added with vegetable or vegetable ingredients. Plants that can be used to improve nutritional status in noodle products



are *Moringa oleifera* leaves. *Moringa oleifera* leaves contain high levels of protein and groups of macronutrient compounds such as Ca, K, Fe, Mg, Mn, Cu, phenolic compounds, and vitamins A, B, C, and D (Aslam et al., 2005; Thurber and Fahey., 2009; Olson et al., 2016). Vitamins A, C, and D in *Moringa oleifera* leave to act as good provitamins (Adi et al., 2019). The addition of *Moringa* powder also affects the increase in protein and mineral levels (Chandra et al., 2019). This is also supported by the research of Adi et al., (2019) which said that the addition of 10% *Moringa oleifera* increased protein status, vitamins A, C, Ca, and Zinc. In addition, from the research of Orisa and Ukpong (2019), adding *Moringa oleifera* leaves as a substitute material also increases the ash, fiber, fat, and protein content.

In addition to nutritional parameters, a good food product must also have a good visual impression. Food products are also influenced by the appearance (appearance) and good texture as well as the authenticity of the ingredients and the acceptability of the product by consumers (Galmarini, 2020). A consumer can accept or reject the food being sold depending on the acceptability of the product served, including the appearance, taste, color, or texture of the product (Willett et al., 2019). In analyzing the quality of a product, it is necessary to combine analysis with instrumental measurement and sensory analysis that uses the human senses (Kohyama, 2020). Sensory in food products can be shown in several parameters, including the quality of taste, color, aroma, or texture (Jeltema et al., 2015; Peyron et al., 2017).

Methods

The ingredients used in making noodles are wheat flour, *Moringa oleifera* leaf flour, water, salt, eggs, and garlic. All the ingredients are then mixed to make a dough. In this study, 4 proportions of *Moringa oleifera* leaf flour and wheat flour were used,

namely 0%: 100%, 5%: 95%, 10%: 90%, and 15%: 85%. The noodles that have been made are then analyzed through an organoleptic test or a sensory test. The scale used in the sensory analysis by the panelists was 4: like very much, 3: like 2: dislike, 1: dislike very much. The analysis involved untrained panelists. Sensory analysis of the product includes parameters of taste, color, aroma, and texture. The data obtained from the panel, then analyzed by SPSS using the Kruskal Wallis test.

Result and Discussion

Noodle food products are foods that are favored by the community. The use of natural ingredients to improve nutrition and sensory in noodle products is needed in its processing. The addition of *Moringa oleifera* leaf flour in the manufacture of wet noodles is the right choice to improve the nutritional and sensory status of the product. The main purpose of adding *Moringa oleifera* leaf flour is to increase product acceptance by consumers. The wet noodle products that have been made were analyzed by hedonic tests on the panelists. The results of the sensory analysis were analyzed by Kruskal Wallis and can be seen in the following table 1:

Table 1. Results of the sensory analysis

Treat ment	Parameter				asympt. Sig
	Taste	Color	Aroma	Texture	
P0	77.70	76.91	81.17	75.11	0.000
P1	103.63	103.06	102.34	100.71	0.000
P2	70.79	69.94	69.04	67.80	0.000
P3	28.89	32.09	29.44	38.37	0.000

In the hedonic test, 35 panelists were used untrained. Panelists were asked to rate the wet noodle product, by including a code on the sample in the form of P0, P1, P2, and P3. In the hedonic analysis, the panelists did not know the concentration of *Moringa oleifera* leaf flour and wheat flour used, but only assigned a code to the sample presented. The purpose of not giving information on the concentration of *Moringa oleifera* leaf flour



and wheat flour is so that the panelists do not suspect the concentration of the product. Because the purpose of the hedonic test is to ask the panelists to give a value according to the impression received on the product when the sample analysis is carried out. The following is the result of sensory analysis on the noodles added with moringa oleifera flour.

Flavor

Taste is very important in the assessment of food products. The human organ that plays a role in assessing taste is the tongue. The tongue has receptors that can distinguish tastes in food ingredients. This is under the statement of Sanjaya et al (2018) which states that the taste of food products can be detected by the presence of the tongue, because the tongue has a good response to flavors in food in the form of sour, sweet, salty and bitter. Taste is considered an important factor in determining a decision to accept or reject a food or beverage product.

From table 1, it is known that the taste value based on the results of the analysis shows the Asymp value. Sig < 0.05 which means that there are differences in the taste value of wet noodles due to the addition of Moringa oleifera flour with different concentrations. Making wet noodles with a ratio of 5% Moringa oleifera flour and 95% wheat flour has the highest hedonic test value of 103.63 and shows the most preferred proportion. The use of Moringa oleifera flour at 15% gives a very low yield which can be concluded that the product is not liked by the panelists. The increasing amount of Moringa oleifera flour added to the dough results in a slightly bitter taste. Thus, the increase in the concentration of Moringa oleifera flour affects the level of taste preference, ie panelists tend not to like the taste. The increase in the concentration of Moringa oleifera flour gives an after-taste effect on the noodle product.

Aroma

Assessment of aroma in a food or beverage product can be hedonic test using a scoring scale (Sanjaya et al., 2018). The aroma of the noodles with the addition of Moringa oleifera flour gives a different visual.

This aroma appears because Moringa oleifera leaves contain compounds that are easy to evaporate, so that when added to the noodle mixture it will evaporate and can be felt by a panelist. Moringa oleifera leaves have compounds with high volatility (easy to evaporate). Volatile compounds are easy to reach the olfactory system (olfactory). Aromatic compounds can be found in all plants or fruits that are often used in the food industry as a flavor in manufactured foods and beverages.

In the manufacture of the noodles, as a control, the highest aroma preference value was 81.17, while in the treatment with the addition of Moringa oleifera leaf flour at the lowest concentration of 5% according to the hedonic test, panelists tended to like the aroma of the noodles. However, the increase in the concentration of Moringa oleifera flour by 10% and 15% by hedonic test panelists did not like the aroma of the noodles. In the treatment with the addition of 5% Moringa oleifera leaf flour by hedonic test, it obtained a higher value of 102.34, along with the increase in the concentration of Moringa oleifera leaf flour giving the panelists' preference for aroma decreased. The increase in concentration makes the noodle product have a sharp aroma like herbal medicine. The hedonic test gives the level of liking for the unfavorable aroma is the concentration of Moringa oleifera leaf flour by 15% with a value of 29.44 (lowest compared to other concentrations). This shows a concentration of 5% can be a recommendation in the manufacture of noodle products and so on. From table 1, it shows that the aroma value in the analysis results shows the Asymp value. Sig < 0.05 which means that there are differences in the aroma value of the wet noodles produced due to the addition of Moringa oleifera flour with different concentrations. The higher the concentration of Moringa oleifera leaf flour gave the hedonic effect on the panelists, which tended to dislike the noodles product.

Color

Color is a vision in food or beverage products that can be quickly and directly detected by the organ of vision (eyes). The



color of food and drink gives the impression of attraction. Based on the results of the hedonic test, the Kruskal Wallis test showed the Asymp value. Sig < 0.05 which means that there is a relationship or there is a difference in the color value of the resulting noodle product. The use of *Moringa oleifera* leaf powder had a significant effect on each treatment. The higher the concentration of *Moringa oleifera* leaf flour (% used), the hedonic test value decreased. The treatment at P1 with the smallest amount of *Moringa oleifera* leaf powder gave the highest hedonic test value for color 103.06 (most preferred). While at a concentration of 10% the hedonic test value is 69.94 and at a concentration of 15% it produces a value of 69.94 which both (10 and 15%) have different values on the hedonic test by a panelist. The higher the concentration of *Moringa oleifera* leaf flour used in the dough, the less attractive the color of the noodles will be. The resulting color is getting stronger.

Texture

The texture of the resulting noodles has a different value. The texture is the state of the product in a hard, rough, solid, liquid, soft or easy, y damaged condition (Prayitno and Rahma, 2020). Based on the results of the hedonic test, the Kruskal Wallis test showed the Asymp value. Sig < 0.05 which means that there is a relationship or there is a difference in the texture value of the resulting noodle product. The increasing concentration of *Moringa oleifera* leaf flour used in the dough gives a higher level of texture to the noodle product. Panelists preferred the addition of 5% *Moringa oleifera* leaf powder concentration compared to the addition of 10% and 15%. The texture of the noodles, the noodles that were treated with the addition of *Moringa oleifera* leaf flour had a significant difference. The use of wheat flour concentration also affects the texture of the noodles. This study using wheat flour with high protein, which allows the high gluten in the flour. So, if the concentration of *Moringa oleifera* leaf flour used is lower, it means that

a high concentration of wheat flour will give the results a more chewy or elastic texture. This elastic level is influenced by the presence of gluten in wheat flour while *Moringa oleifera* leaves do not have gluten compounds (Trisnawati and Nisa, 2014) so that if used in high concentrations it will reduce the degree of elasticity in noodles because the gluten in wheat flour decreases.

Conclusion

From the results of the study, it can be concluded that the increasing concentration of *Moringa oleifera* leaf flour used has a significant effect on the sensory properties of noodle products. The recommended concentration for making noodles is 5%. Further research needs to be carried out using a lower concentration of *Moringa oleifera* leaf powder below 5%.

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