Characteristic Study of Herbal Tea Brewing a Combination 0f Mint Leaves (Mentha Piperita) and Moringa Leaves (Moringa Oleifera) with Different Drying Time

A. Alamsyah, E. Basuki* and A. Safira

Faculty of Food Technology, University of Mataram, Indonesia

***Corresponding Author**

DOI: https://doi.org/10.51244/IJRSI.2025.12030054

Received: 06 March 2025; Accepted: 12 March 2025; Published: 10 April 2025

ABSTRACT

This study aims to determine the drying time on the characteristics of mint and moringa leaf combination tea. Completely Randomized Design (CRD) with 6 treatment combinations is used in this experiment, namely a combination of mint and moringa (K) and drying time (P) with a temperature of 50 ℃, namely K1P1 (25% mint, 75% moringa, 90 minutes), K1P2 (25% mint, 75% moringa, 120 minutes), K2P1 (50% mint, 50% moringa, 90 minutes), K2P2 (50% mint, 50% moringa, 120 minutes), K3P1 (75% mint, 25% moringa, 90 minutes), K3P2 (75% mint, 25% moringa, 120 minutes) which were repeated 3 times to obtain 18 experimental units. The parameters tested were polyphenol content, water content, ash content, and organoleptic. The statistical analysis was carried out using the SPSS program (ver. 19) by applying the analysis of variance (ANOVA) regarding experimental design. The application of significance level at 0.05 and Tukey's test was achieved. The results showed that the combination of treatments and drying time had a significantly different effect on polyphenol content, water content, ash content, scoring and hedonic tests on color and aroma scoring tests but were not significantly different from the scoring and hedonic tests on taste and hedonic tests on the aroma of tea with a combination of mint leaves and moringa leaves. The longer the drying time, the lower the polyphenol content, water content, but the higher the ash content of tea with a combination of mint leaves and moringa leaves. In addition, the combination of mint leaves and moringa leaves also affected the results of the tests carried out. The combination tea (50% mint, 50% moringa, 120 minutes) with a polyphenol content of 6.06%, moisture content of 6.42%, ash content of 7.36%, yellow in color, slightly bitter in taste, slightly pungent in aroma and slightly preferred by panelists and in accordance with the standard. Clearly, the production of herbal teas with valuable bioactive content may pose different functional features. Therefore, scaling up to commercial consumption of moringa presents different ways to obtain various functional benefits. The key goal of this work was to provide appropriate and healthy herbal teas to consumers. It can be inferred that Mild Mint were approved when added with 50% moringa. Increasing mint levels decreased the astringency and aftertaste and increased the overall acceptability.

Keywords: drying time, combined tea, mint leaves, moringa leaves.

INTRODUCTION

Indonesia is famous as a country that has many herbal spices that can be used as various medicines or herbal drinks. Herbal drinks or health drinks in Indonesia are generally in the form of herbal medicine, ginger tea and tea. Tea is one of the beverage products that is widely consumed by Indonesian people and people around the world. Tea has a distinctive taste and aroma. In addition to being useful for refreshing the body, tea can also be used to prevent disease [10]. Tea can be grouped into two groups, namely herbal and non-herbal tea. Herbal tea is a functional drink made from herbal plants that have good properties for health, can help treat a disease, and refreshing drink [2]. Herbal tea does not only come from tea leaves but can also be made from other plant leaves such as mint leaves and moringa leaves. Mint is one of the herbal plants. The main content of mint leaf oil (Mentha piperita L.) is menthol, menthone and methyl acetate with the highest content (73.7 - 85.8%). In addition, the content of monoterpene, menthofuran, sesquiterpene, triterpene, flavonoids, carotenoids, tannins

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue III March 2025

and several other minerals are also found in mint leaf oil. Menthol is efficacious as a carminative (sedative), antispasmodic (anti-cough) and diaphoretic (warming and inducing sweat). Mint leaves have volatile properties, are colorless, have a sharp odor and cause a warm sensation followed by a refreshing cold sensation [11]. The mint leaves are rich in phenolic compounds that make up 20% of the dry weight. In an infusion with a fresh taste and particular scent, 75% of these compounds can be extracted .

Moringa oleifera Lam belongs to the Moringaceae family and is a rapidly growing perennial foliaged tree broadly planted due to its great adaptability to climatic circumstances [10]. It is used as food, in medicines, and for industrial purposes of its nutritional, therapeutic, and prophylactic characteristics were concerned [12]. Recently, various parts of M. oleifera demonstrated hypolipidemic, hypoglycemic, and hepatoprotective effects). Moringa contains substantial amounts of vitamins, considerable quantities of proteins, minerals, and phytonutrients [12,13] with high antioxidant capacities [20]. Many phytochemicals such as kaempferol and quercetin glycosides as main flavonoids were identified [21]. However, additional phenolics were characterized as gallic acid, syringic acid, quercetin 3-O-beta-glucoside, and rutin [11]. Many parts of the M. oleifera tree have been recognized as a goodsource of phenolic acids, flavonoids, glucosinolates, carotenoids, and highly bioavailable minerals [12]. Herbal teas such as mint and peppermint are effective and widely used in tea, flavoring foods, and beverages, and their essential oils are also used in chewing gum, candy, toothpaste, mouthwash, aromatherapy, pharmaceuticals, and antimicrobials [13]. The benefits of Moringa leaves include anti-inflammatory, hepatitis, smooth urination, and anti-allergic. Moringa leaves are efficacious for treating various complaints caused by vitamin and mineral deficiencies. The quality standards of the herbal tea products produced can be influenced by the manufacturing process such as the sorting, wilting, chopping, and processing process.

The quality standards of herbal tea products produced can be influenced by the manufacturing process such as sorting, wilting, chopping, drying techniques, and drying time. The purpose of the drying process is to stop the enzymatic oxidation process and also aims to reduce water from the material to the desired water content, which means reducing the availability of water for microbial growth and enzyme activity [6]. Drying herbs can be done using sunlight or using a dryer. Things that need to be considered during the drying process are drying temperature, air humidity, air flow, drying time and surface area of the material. During the drying process, these factors must be considered so that dry herbs are obtained that are not easily damaged during storage [7]. The conditions of the process must be considered to avoid the loss of important substances that are efficacious from fresh ingredients. Various herbs or medicinal plants can actually be processed into dry herbal tea. Basically, the processing of all types of medicinal plants is almost the same. Usually the difference lies in the length and temperature during drying because it is adjusted to the characteristics of fresh ingredients. According to Rofiah's research [17], the manufacture of herbal tea combined with fig leaves and mint leaves with the best tea quality is found in the T1P2 treatment (combination of fig leaves 2 g: mint leaves 2 g) with a drying time of 150 minutes, namely 3.1 brownish yellow, has a distinctive mint aroma, a fresh taste and is quite popular with the public and the highest antioxidant activity is found in the T3P1 treatment (combination of fig leaves 6 g: mint leaves 2 g) with a drying time of 120 minutes of 81.652%. The longer the drying time, the antioxidant activity will also decrease due to the antioxidant properties that are not resistant to heat. Meanwhile, the manufacture of combination tea with one of the ingredients, namely moringa, is in line with the research of Wahyuni and Yovita [20] which states that, based on the results of observations, the selected product is the product code p3s3 with a ratio of moringa leaves and soursop leaves of 1: 2 with a drying temperature of 60 ° C where the water content value is 13.46% and antioxidants 284.66 ppm. Based on this background, a study was conducted on "Study of Characteristics of Herbal Tea Combination of Mint Leaves (Mentha piperita L.) and Moringa Leaves (Moringa oleifera)."

MATERIALS AND METHODS

Completely Randomized Design (CRD) design with 6 treatment combinations, namely a combination of mint leaves and moringa leaves (K) and variations in drying time of 90 minutes (P1) 120 minutes (P2) with a drying temperature of 50 ° C. Each treatment with 3 replications. The treatments are as follows: K1P1 (25% mint, 75% moringa, 90 minutes), K1P2 (25% mint, 75% moringa, 120), K2P1 (50% mint, 50% moringa, 90 minutes), K2P2 (50% mint, 50% moringa, 120 minutes), K3P1 (75% mint, 25% moringa, 90 minutes), and K3P2 (75% mint, 25% moringa, 120 minutes).

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue III March 2025

Data analysis The statistical analysis was carried out using the SPSS program (ver. 19) by applying the analysis of variance (ANOVA) regarding experimental design. The application of significance level at 0.05 and Tukey's test was achieved.

Process of Making Mint and Moringa Leaf Tea

The process of making mint and moringa leaf tea begins with sorting the ingredients where the leaves used are fresh, undamaged and unwilted leaves, then the mint and moringa leaves are washed clean and drained. Then, the mint and moringa leaves are wilted by airing them at room temperature (27^{o}C) for 12 hours. After that, the mint and moringa leaves are combined according to the research design and dried with a cabinet dryer at a temperature of 50°C for 90 and 120 minutes. The combination of mint and moringa leaves that have been dried is then crushed using a blender until smooth. The parameters observed in this study include chemical parameters (polyphenol content, water content, and ash content) and organoleptic parameters (aroma, taste, and color). Total phenolic content was determined using the Folin-Ciocalteau method, and expressed as milligram gallic acid equivalents per gram sample (mg GAE 100 g−1 dw) according to Aprilianti [4]. Organoleptik evaluation. Immediately after preparation, an organoleptic evaluation of hot herbal teas by twenty well-trained panelists aged 20-25 years comprised of graduate students and staff members was done. They preliminary received an intensive description of the used procedure and evaluated properties. Panelists were asked to evaluate herbal teas extracts toward color, aroma, taste, Aftertaste, astringency, and overall acceptability. A 7-point hedonic scale (7 being 'like extremely', 4 'like accepted', and 1 being 'dislike extremely') has been used. Results were subjected to analysis of variance and average of the mean values of the attributes mentioned above.

RESULTS AND DISCUSSION

Water Content

The relationship between the combination of treatments and drying time on the water content of the combination of mint and moringa leaves can be seen in

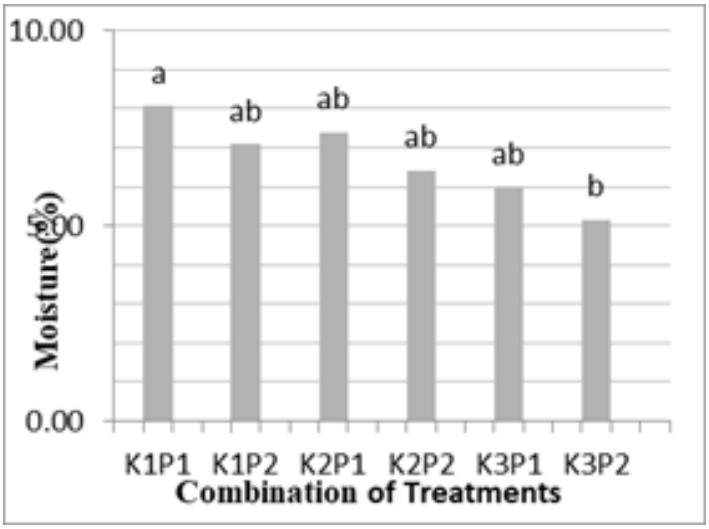

Figure 1. Graph of Combination of Treatment and Drying Time on Moisture Content of Mint and Moringa Leaf Combination Tea

The combination of treatment and drying time of 90 and 120 minutes at the ratio of mint and moringa leaves ranged from 5.15-8.06%. The highest water content was obtained in the K1P1 treatment with a ratio of mint and moringa leaves (25% mint: 75% moringa, 90 minutes) which was 8.06% while the lowest water content was found in the K3P2 treatment with a ratio of mint and moringa leaves (75% mint: 25% moringa, 120 minutes) of 5.15%. The higher the concentration of mint leaves and the lower the concentration of moringa leaves and the effect of drying time, the lower the water content of mint-moringa tea. There was a decrease in the water content of the combination of mint and moringa leaves which was influenced by the combination of treatments with the highest combination of mint and the length of drying time (figure 1). This is because antioxidants have properties

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue III March 2025

that are not resistant to heat. Research conducted by Anggraini et al. [3] stated that the more mint leaf extract added, the lower the water content produced. This is due to the evaporation of mint leaves during the water content process. Mint leaves are classified as essential oils that are volatile and easily evaporated. According to Friskilla and Rahmawati [10], the water content of dry tea from the formulation of moringa leaves with black tea ranges from 3.19-3.23%, where the water content tends to decrease with increasing moringa leaves. The combination of treatments with the addition of the most mint resulted in a decrease in the water content of the combination of mint and moringa leaves. In addition, the drying time also affects the high and low water content of the tea. This is in line with Noviatami's research [15] the longer the drying time, the water content of the horse whip leaf tea produced decreased from 7.08% to 5.31%. The longer the drying time, the water content in the material decreases, but the speed of the decrease in water content is getting smaller. Based on research by Apriliyani et al. [4], this is explained because there are two processes of water transfer from the inside of the material to the surface and water vapor transfer from the surface to the surrounding air. According to SNI 3836 of 2013 concerning the quality of dry tea in packaging, the maximum water content is 8% so that in the K1P1 treatment (25% mint: 75% moringa, 90 minutes) with a water content of 8.06% and K2P2 (50% mint: 50% moringa, 120 minutes) with a water content of 7.39% which can comply with the SNI.

Ash Content

The relationship between the combination of treatments and drying time on the ash content of mint and moringa leaf tea can be seen in Figure 2

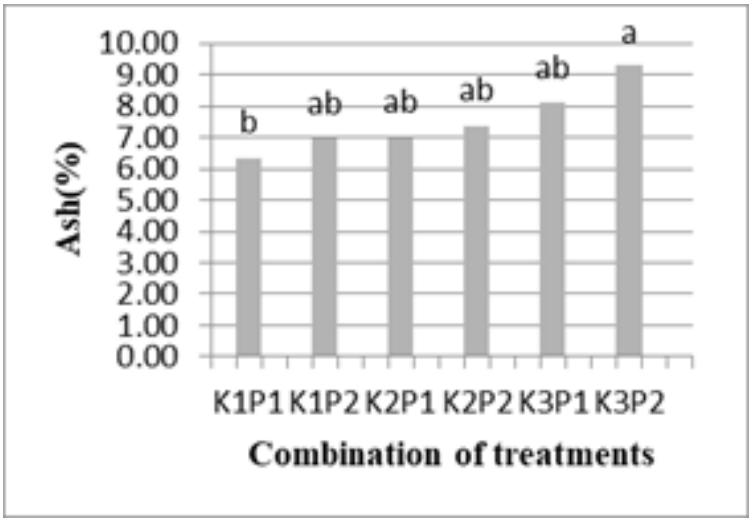

Figure 2. Graph of Combination of Treatment and Drying Time on Ash Content of Mint and Moringa Leaf Combination Tea

The combination of treatment and drying time of 90 and 120 minutes on the ratio of mint leaves and moringa leaves ranges from 6.32-9.30%. The highest ash content of mint-moringa tea is found in the K3P2 treatment with a drying time of 120 minutes and a ratio of mint and moringa leaves (75% mint leaves: 25% moringa leaves) which is 9.30% while the lowest ash content value is in the K1P1 treatment with a drying time of 90 minutes and a ratio of mint leaves and moringa leaves (25% mint leaves: 75% moringa leaves) which is 6.32%. The lower the concentration of moringa leaves and the higher the concentration of mint leaves and the effect of drying time, the higher the ash content of mint-moringa tea. This is in line with the research of Wilanda et al. [22]. The treatment of adding mint leaves is increasing because mint leaves have a mineral content including calcium, potassium, which is quite high in addition to iron, phosphorus and sodium, which also affect the ash content. The treatment of adding moringa leaves also did not increase the ash content. This is also in line with the research of Friskilla and Rahmawati [10] who stated that the ash content of dry powder of moringa leaf formulation with black tea ranged from 7.25% - 7.83%, where the ash content tended to increase with increasing moringa leaves. However, the results of the Anova test showed that the formulation of moringa leaves with dry black tea did not significantly affect the ash content. The effect of drying time can also affect the high and low ash content of tea. This is in accordance with the research of Fitriana et al. [9] who said that the longer the drying process, the ash content of herbal tea with keji beling leaves increased from 2.81% to 3.73%. According to SNI 3836 of 2013

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue III March 2025

concerning the quality of dry tea in packaging, the maximum ash content is 8% so that in the K2P2 (50:50) treatment with an ash content of 7.36%, which can meet the SNI.

Polyphenol Content

Polyphenol compounds are bioactive components that have antioxidant activity and are naturally found in vegetables and fruits and drinks such as tea. Polyphenol compounds consist of several subclasses, namely flavonols, flavones, antasianidins, catechins and biflavans [5]. The relationship between the combination of treatments and drying time to the polyphenol content in meniran leaf tea can be seen in Figure 3.

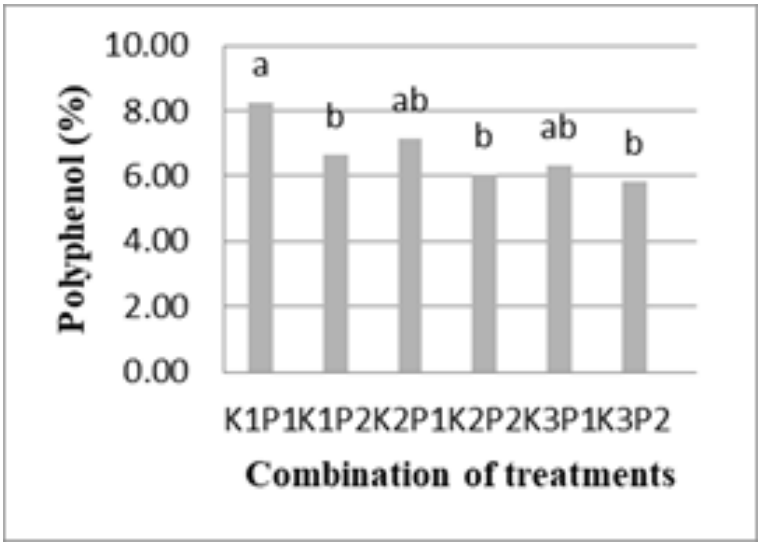

Figure 3. Graph of Combination of Treatment and Drying Time on Polyphenol Content of Mint and Moringa Leaves

Based on Figure 3, it is known that the combination of treatment and drying time showed a significantly different effect on the analysis of polyphenol content of the combination of mint and moringa leaves. The average ash content of meniran leaf tea ranged from 4.99% -7.90%. Based on Figure 6, it shows that the combination of treatment and drying time of 90 and 120 minutes on the ratio of mint and moringa leaves ranged from 5.83-8.25%. The highest polyphenol content of mint-moringa tea was found in the K1P1 treatment with a drying time of 90 minutes and a ratio of minta and moringa leaves (25% mint: 75% moringa, 90 minutes) which was 8.25% while the lowest polyphenol content was in the K3P2 treatment with a drying time of 120 minutes and a ratio of mint and moringa leaves (75% mint: 25% moringa, 120 minutes) which was 5.83%. The higher the concentration of moringa leaves and the lower the concentration of mint leaves and the effect of drying time, the more polyphenols in mint-moringa tea will increase. According to Widowati et al. [21], the polyphenol content in moringa is very high, which can play a role in counteracting free radicals, so the more concentration of moringa leaves is added, the more polyphenol levels in a food ingredient will increase. The polyphenol content in mint leaves is the peppermint compound which acts as an antioxidant which is seen in the total polyphenols of mint leaf infusion water, which ranges from 1.0 - 21.8%. In addition, the drier a material is, the components in the material such as membranes and cell organelles are tightly bound together without water, so that the detected phenol content is lower [22]. This results in the addition of moringa leaves and mint leaves being able to increase the polyphenol levels in a material, but there are several factors that affect the polyphenol levels, such as the drying time. According to Apriliyani [4], the drier a material is, the components in the material such as membranes and cell organelles are tightly bound together without water, so that the detected phenol content is lower. According to SNI 3836 of 2013 concerning the quality of dry tea in packaging, the minimum polyphenol content is 5.2% so that in K1P1, K1P2, K2P1, K2P2, K3P1 and K3P2 with polyphenol content of 8.25%, 6.67%, 7.14%, 6.07%, 6.31% and 5.83% which can meet the SNI.

Organoleptic Aroma

Aroma is one of the parameters in determining the quality of a food product. Aroma is one of the visual properties used in assessing food quality using a sensitive sense of smell [5]. The combination of treatments and drying

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue III March 2025

times have a significantly different effect on mint and moringa teas in terms of scoring and hedonics. The relationship between the combination of treatments and drying times on mint and moringa leaf teas can be seen in Figure 4.

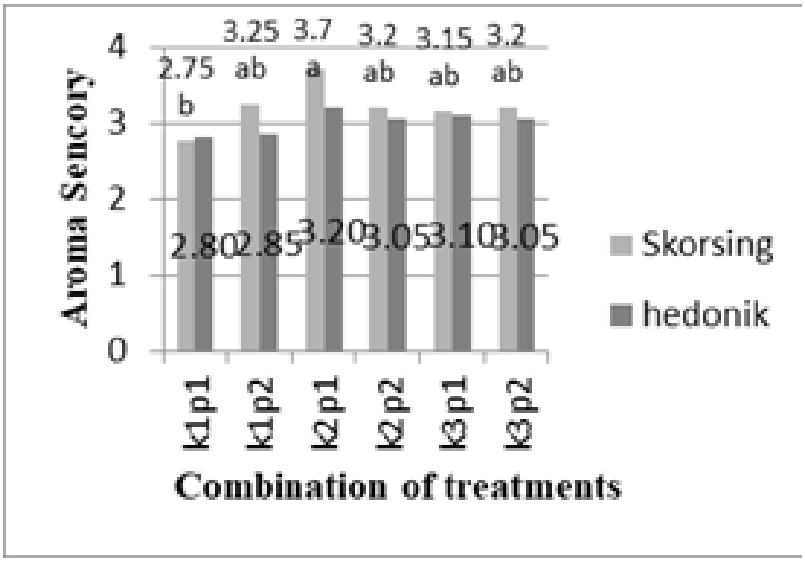

Figure 4. Graph of Combination of Treatment and Drying Time on Color (Organoleptic) of Mint Leaf Tea and Moringa Leaves

Based on Figure 4, it shows that the combination of treatment and drying time for mint and moringa leaf tea based on the assessment level (scoring) carried out by 20 panelists gave a significantly different effect with the average panelist giving a value in the range of 2.75-3.7 which indicates that the tea has a slightly mint and moringa leaf aroma. According to Friskilla and Rahmawati [10], the aroma of moringa leaf tea infusion with black tea ranges from slightly unpleasant (score 2.7-3.2) for all formulations. The results of the ANOVA test of different moringa leaf tea formulations with black tea did not significantly affect the aroma of the tea infusion ($\alpha = 0.05$). The aroma of all formulations of moringa leaf tea infusion and black tea was slightly unpleasant. Aroma is difficult to measure so it usually gives rise to many different opinions in assessing the quality of the aroma. In line with this research, the combination of tea causes the aroma to be mixed and has a value somewhat like the aroma of mint and moringa leaves. This is in line with Nurjadidah's research [16] which states that temperature treatment and drying time have no significant effect on the aroma of white guava leaf tea where the overall panelist assessment of the white guava leaf tea aroma scoring ranges from 3.45-4.3 which has a pungent aroma to a slightly pungent aroma. Based on the level of hedonic assessment carried out by 20 panelists, it gave no significant effect with the average panelist giving a value in the range of 2.8-3.8 which indicates a slight liking for the aroma of mint and moringa leaf tea. This is in line with Wulandari's research [23] which shows that the level of panelist preference for the aroma of mango leaf tea with withering time and drying time has no significant effect, the average panelist assessment of the aroma of mango leaf tea tested hedonically ranges from 2.95 (dislike) -3.35 (slightly like). This is in accordance with the results obtained that aroma has no effect, because differences in opinion each person has a different sense of smell and different preferencesBased on Figure 4, it shows that the combination of treatment and drying time on mint leaf tea and moringa leaves based on the assessment level (scoring) carried out by 20 panelists gave a significantly different effect with the average panelist giving a value in the range of 3.10-4.05 which shows that mint leaf tea and moringa leaves are yellow to slightly brownish yellow along with the length of drying time. The longer the drying, the darker the color of the tea brew. The longer the drying, the darker the color of the tea brew. According to Fitriana [9], the drying process makes the leaves dark, because chlorophyll breaks down. Degraded chlorophyll will produce pheophytin as a derivative compound of chlorophyll which is brownish yellow. Hedonically, the color of mint and moringa leaf tea did not have a significantly different effect with an average of 2.9-3.55, which means that the panelists rather liked the color of mint and moringa leaf tea. This is thought to be because the color of mint and moringa leaf tea has a distinctive color like tea in general, namely brownish yellow. This is also in line with the research of Adhamatika [1] which states that the color of tea that is increasingly dark brown is preferred over tea with a bright color by panelists, where the results of the hedonic test in the study of bidara leaf tea were 3.15 - 3.75 with the criteria of rather liking to liking.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue III March 2025

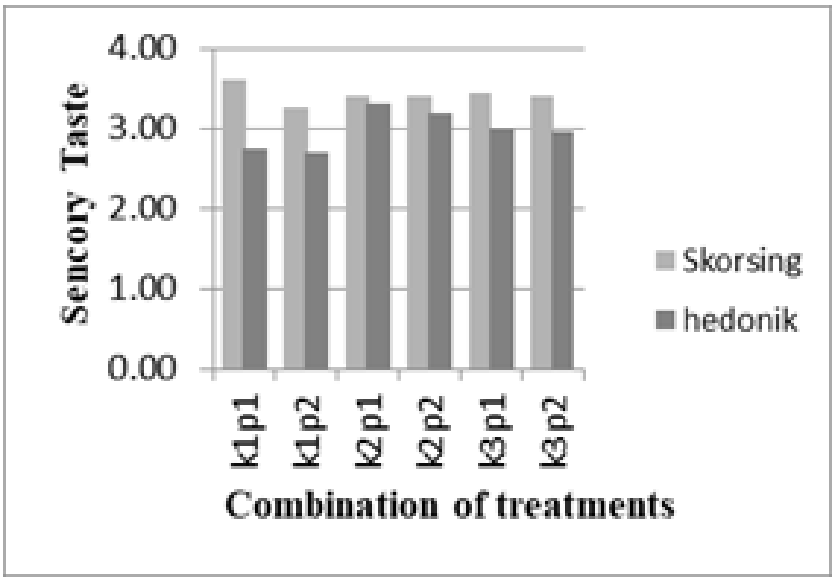

Figure 5. Graph of Combination of Treatment and Drying Time on Taste (Organoleptic) of Mint Leaf Tea and Moringa Leaves

Color is the most attractive quality factor for consumers, color gives the impression of whether the food will be liked or not. The difference in treatment combination and drying time has a significantly different effect on mint and moringa leaf tea in scoring and has a significantly different effect hedonic. The relationship between the combination of treatment and drying time of mint and moringa leaf tea on color can be seen in Figure 6.

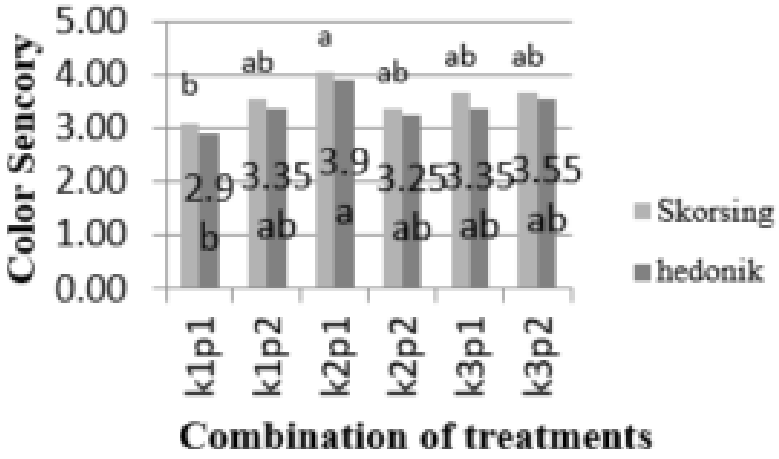

Figure 6. Graph of Combination of Treatment and Drying Time on Color (Organoleptic) of Mint Leaf Tea and Moringa Leaves

Based on Figure 6, it shows that the combination of treatment and drying time on mint and moringa leaf tea based on the assessment level (scoring) carried out by 20 panelists gave a significantly different effect with the average panelist giving a value in the range of 3.10-4.05 which shows that mint and moringa leaf tea is yellow to slightly brownish yellow along with the length of drying time. The longer the drying, the darker the color of the tea brew. The longer the drying, the darker the color of the tea brew. The drying process makes the leaves dark because chlorophyll breaks down. Degraded chlorophyll will produce pheophytin as a derivative compound of chlorophyll which is brownish yellow [14].

Hedonically, the color of mint and moringa leaf tea did not give a significantly different effect with an average of 2.9-3.55, which means that the panelists rather liked the color of mint and moringa leaf tea. This is thought to be because the color of mint and moringa leaf tea has a distinctive color like tea in general, namely brownish yellow. This is also in line with research by Adhamatika [1] which states that the darker brown color of tea is

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue III March 2025

preferred over tea with a brighter color by panelists, where the results of hedonic testing in the study of bidara leaf tea were 3.15 - 3.75 with the criteria of slightly preffered.

Immediately after preparation, an organoleptic evaluation of hot herbal teas by twenty well-trained panelists aged 20 - 25 years comprised of under -graduate students and staff members was done. They preliminary received an intensive description of the used procedure and evaluated properties. Panelists were asked to evaluate herbal teas extracts toward color, aroma, taste, Aftertaste, astringency, and overall acceptability. A 7-point hedonic scale (7 being 'like extremely', 4 'like accepted', and 1 being 'dislike extremely') has been used. Results were subjected to analysis of variance and average of the mean values of the attributes mentioned above. Organoleptic characteristics of different herbal teas. The organoleptic appeal of tea, like all food products, is an important consideration in the development of new products. Interestingly, herbal tea is gaining growing market interest due to a growing awareness of health benefits derived from its uses [8]. Seventy-two mixtures were prepared by mixing Moringa with Mint leaves. The mixing ratios started with 25% Moringa and ended with 75%. Hot Herbal teas extracts prepared from seventy-two mixtures were organoleptically evaluated (data not shown). All organoleptic properties for pure moringa hot tea presented sores less than 4 indicating lower panels acceptance. This may be due to the astringent taste of pure moringa teas [1,4,5]. However, a highly significant acceptable score in color, aroma, flavor, Aftertaste, astringency, and overall acceptability was recorded. The favored selected herbal teas were organoleptically reevaluated, and the results were illustrated in (Fig 4-8).

CONCLUSION

Clearly, the production of herbal teas with valuable bioactive content may pose different functional features. Therefore, scaling up to commercial consumption of moringa presents different ways to obtain various functional benefits. The key goal of this work was to provide appropriate and healthy herbal teas to consumers. It can be inferred that combining Mint with Moringa categorized them into three groups. Mild Mint were approved when added with 50% Moringa. Increasing mint levels decreased the astringency and Aftertaste and increased the overall acceptability. The finding obtained offers a wide broad selection to consumers depending on acceptability, availability of raw materials, cost-effectiveness, and applicability.

REFERENCES

1. Adhamatika, A. and Erni, S. M. 2021. The Effect of Drying Method and Percentage of Dry Tea on the Characteristics of Jujube Leaf Tea (Ziziphus mauritiana L.) Brewing. Journal of Food and Agroindustry, 9 (4): 196-207.
2. 2012. Tea with Amazing Benefits. Stomata. Surabaya.
3. Anggraini, T., Diana, S., Sahadi, D. I., Firdaus, A. 2014. The Effect of Adding Peppermint (Mentha piperita, L.) on the Quality of Pegagan Leaf Tea (Centella asiatica, L. Urban). Journal of Industrial Research and Development, 4 (2). 79-88.
4. Apriliyani, D, A., Sigit, P., and Bara, Y. 2021. The Effect of Formulation Variations and Drying Time on the Characteristics of Beluntas Leaf and Mint Leaf Herbal Drinks. Agrointek Journal of Agricultural Industrial Technology, 15(3). 876-885.
5. Atmadja, T. F. A. and Andi, E. Y. 2019. Formulation of Functional Drinks of Meniran Tea (Phyllanthus niruri) High in Antioxidants. Action, Aceh Nutrition Journal, 4 (2): 142-148.
6. Indonesian National Standardization Agency. 2013. SNI 3836:2013 Dry Tea in Packaging. National Standardization Agency, 1–11.
7. Ministry of Health of the Republic of Indonesia, 1985. How to Make Simplicia. Directorate General of Drug and Food Control. Jakarta.
8. Djunaidi, I, H., Eko, W., and Diyanti, A, A. 2018. The Effect of Using Mint Leaves in Flour Form as Additional Feed on the Quality of Broiler Carcasses. Journal of Tropical Animal Nutrition, 1(1). 1-8.
9. Fitriana, A., Noviar, H., and Yusmarini. 2017. The Quality of Keji Beling Leaf Herbal Tea with Drying Time Treatment. Sago, 16 (2): 34-41.
10. Friskilla, Y., and Rahmawati. 2018. Development of Black Tea Drinks with Moringa Leaves as a Refreshing Drink. Journal of Creative Industry and Entrepreneurship, 1(1). 23-32.
11. Hadipoentyanti, E. 2012. Technical Guidelines for Recognizing Mentha Plants (Mentha arvensis L.) and Their Cultivation. Research Center for Spices and Medicinal Plants. Bogor

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue III March 2025

12. Hanif, F., and Khairun, N, B., 2022. Literature Review: Moringa Leaves as Healthy Food Supplements for Nutrition in the First 1000 Days of Life. Journal of Health, 13(2). 398-407.
13. Marhaeni, L,S. 2021. Moringa Leaves as a Source of Functional Food and Antioxidants. Agrisia Journal, 13(2). 40-53.
14. Mahrita, S., Wijantri K., Evi, F., and Tianto. 2022. The Effect of Drying Time on the Quality of Sungkai Leaf Herbal Tea (Peronema canescens Jack). Journal of Scientific Horizons, 2 (4): 1411-1422.
15. Noviatami, A. 2021. Effect of Drying Time on the Antioxidant Activity of Horsetail Leaf Tea (Stachytarpheta jamaicensis). Thesis. University of Mataram. ram.
16. 2022. Effect of Temperature and Drying Time on the Antioxidant Activity of White Guava Leaf Tea. Thesis. University of Mataram Mataram.
17. Rofiah, D. 2018. Antioxidant and Organoleptic Activity of Fig Leaf and Mint Leaf Combination Tea with Variations in Drying Time. Publication Manuscript. Department of Biology, Faculty of Teacher Training and Education. Muhammadiyah University of Surakarta.
18. Sulaiman, I and Santi, N. 2023 Taro Processing Technology and Its Applications. Syiah Kuala University Press. Banda Aceh.
19. Vanda, T. 2019. Relationship Between Taste Perception with Caries Experience and Diet in Children Aged 12-13 Years in Medan Maimun and Medan Perjuangan Districts. Thesis. University of North Sumatra. Medan.
20. Wahyuni, Y., and Yovita, Y, B. 2021. The Effect of Comparison of Herbal Tea Combination of Moringa Leaves with Soursop Leaves (Annona muricata Linn.) and Variation of Drying Temperature on the Characteristics of Herbal Tea. Vol 5, No. 1. 1036-1042.
21. Widowati, A, N., Anang, M, L., and Sri, M. 2022. The Effect of Adding Dried Lemon Peel (Citrus lemon L.) on Organoleptic Characteristics, Total Dissolved Solids, pH, Vitamin C Content and Total Phenol of Moringa Leaf Tea Bags.Journal of Food Technology, 6(1). 30-39
22. Wilanda, S., Nita, Y., and I Ketut, B. 2021. Study of the Quality and Antioxidant Activity of Coffee Peel Tea (Coffea Canephora) with the Addition of Mint Leaves .Journal of Agricultural Science Research, 1(1). 86-93.
23. Wulandari, D. 2021. Effect of Withering Time and Drying Time on Antioxidant Activity of Mango Leaf Tea. Thesis. University of Mataram. Mataram.