AGARICUS: Advances Agriculture Science & Farming
Vol. 4 No. 3 February 2025, Page. 52-59
E-ISSN: 2797-0884

Organoleptic Test of Healthy Turmeric Drinks in Combination with Clover

Yessita Puspaningrum
[1]Agricultural Technology Product, KH. A. Wahab Hasbullah University
*Email: yessita@unwaha.ac.id

ABSTRACT
Clover is generally used as a remedy for sore throat, mouth sores, fever, and shortness of breath.. This research was conducted to determine the process of making a healthy drink and organoleptic test from turmeric and clover. This study uses the RAL method with five levels and four repetitions, so this study use twenty experimental units were obtained. Sample is made as K1 is clover 30%; turmeric 70%, K2 is clover 40%; tumeric 60%, K3 is clover 50%; tumeric 50%, K4 is clover 60%; turmeric 40%, K5 is clover 70%; tumeric 30%. Data analysis used descriptive, qualitative methods. The process of making healthy tumeric drinks combinationwith clover. Healthy tumeric drinks by mashing clover leaves and turmeric leaves, filtering, cooking until boiling then adding sugar, stirring slowly over medium heat, and speeding up the mix when it has clotted to get fine crystals. The cause of the color change is influenced by the crystallization temperature. The aroma of sugar caramel in the healthy drink of clover and turmeric and the taste is sweet. The acceptance variable is in great demand in the combination of 50% clover leaf K3 and 50% turmeric leaf.

***Keywords**: Clover; Turmeric; Organoleptic.*

INTRODUCTION

Clover (*Marsilea Crenata*) growth is not expected because it interferes with the growth process of rice plants. So it is necessary to use it as food or drink and also other creative ideas as an alternative to anticipate crop failure. So that farmers still earn even though they experience crop failure. The general use of clover (*Marsilea Crenata*) in the community is used for vegetables in pecel rice. There are also those who use it as an herbal drink. Clover (*Marsilea Crenata*) has benefits to help accelerate the healing of sore throat, mouth sores, fever and shortness of breath (Saleh et al, 2017). In addition to clover (*Marsilea Crenata*), turmeric (*Curcuma Longa*) is one of the medicinal plants that has benefits, which contain saponins, flavonoids, tamines and steroids, potassium 41.44%, sodium 10.03%, calcium 2.21%, magnesium 5 .50% and Iron 0.32. Clover (*Marsilea Crenata)* turns out to have several benefits, namely as a treatment. Researchers have the idea to combine clover (*Marsilea Crenata)* and turmeric (*Curcuma Longa*) so that it becomes a healthy drink) that is rich in benefits and nutrients.

Choosing carefully drinking as a nutritional enhancer for the metabolism is an important thing , if an error occurs in determining the healthy drink consumed can cause excess energy, research conducted by Bleichet et al. (2009) in the United States showed that calorie drinks (containing sugar) contributed significantly to energy intake. Two-thirds of adults (63%) consume calorie drinks an average of 293 kcal/day. Young adults are the group with the highest prevalence (72%) consuming calorie drinks with an average intake of 289 kcal/day. Consumption of beverages such as juices and fizzy drinks accounted for 81% of the increase in energy intake from calorie drinks.

Clover plants are characterized by round leaves resembling an umbrella and consisting of four leaflets called clovers. Clover has a fibrous taproot. The stems are erect and very easy to break with a height of 2 to 18 cm. Clover belongs to the Marsileaceae family, with the Latin name Marsilea Crenata. Clover is heterosporous, where male and female spores become one plant (Saleh et al., 2017).

Turmeric plants come from the central and southern regions of the Americas. The morphological characteristics of flowers and fruits of T. Paniculatum gaertn are compound flowers in terminal panicles (located at the tip), loose, and the tip of the branch is branched again with a fork tip slender flower stalk, 5 petals, oval in shape and purplish red. Javanese turmeric (*Curcuma Longa*) begins to flower at the age of 74-80 days after sowing. The fruit will be superior and rounded with three chambers in the inner wall.

Yellow when young and brownish red when ripe, the fruit is spherical and red-brown in color with a diameter of 3 mm. Age of ripe fruit between 20-22 days after the flowers bloom. The seeds are small flat, measuring 0.7-1 mm, and shiny black (Steenis, 1992 in Masyitho, 2016).

Hidayat, 2005 in Ikhtimami, 2008 said that the root of Javanese turmeric (*Curcuma Longa*) is a taproot, branched, and long. The skin is yellowish brown with a white inside. The length varies from a few cm (in plants that are several years old) to 30 cm (in plants aged 10 years and over). The roots have a bitter and sweet smell and the root extract of Javanese turmeric (*Curcuma Longa*) contains panaksoside (a type of saponin glycoside).

Hariana 2006 et al in Muhallilin, 2012 mention turmeric plants as tonic, aphrodisiac, treat lung, diarrhea, irregular menstruation, prevent vaginal discharge, breast milk disorders. Rusli et al, 2010 in Seswita, 2010 stated that the active ingredient content is almost the same as Korean turmeric, namely saponins, flavonoids, tamines and steroids (Potassium 41.44%, Sodium 10.03%, Calcium 2.21%, Magnesium 5.50% and 0.32% iron), serves to help optimize metabolism in the body and absorption of nutrients by improving digestive function. Javanese turmeric is one of the medicinal plants whose roots and leaves have many properties as traditional medicine.

In general, Javanese turmeric plants contain chemical substances such as saponins, flavonoids, and tannins (Syamsuhidayat et al., 1991 in Ikhtimami, 2008). Androgenic compounds that have been identified from the roots of the Javanese turmeric plant are stigmast 5-en-3-ol or also called B-sitosterol compounds which are included in the plant sterol group (Wiryowidagdo, 1993). Javanese turmeric leaves are empirically used to strengthen the immune system (Rusli and Towaha, 2010). Flavonoids have been shown to increase the immune system by triggering lymphocyte proliferation, increasing the number of cells and increasing IL-2 activity (Jiao, 1999).

Kemp et al., (2009) said that sensory evaluation is a scientific method used to generate, measure, analyze and interpret the perceived response of a product through the human senses. Sensory evaluation can be divided into two categories, namely: objective and subjective. In objective testing the sensory attributes of the product are evaluated by trained panelists. Meanwhile, in subjective testing, the sensory attributes of the product were measured by consumer panelists. Organoleptic properties are properties that can be assessed with the five senses where these organoleptic properties are widely used to assess agricultural and food commodities. The ability of each person to write down the organoleptic properties of a food material is different, this depends on the concentration of the senses and each person (Tarwendah, 2017). The organoleptic properties tested in this study were aroma, color, taste, acceptability.

The purpose of this study was to determine the manufacturing process and to find out the taste, color, aroma, and to determine the organoleptic test respondents' acceptance of the healthy drink of clover (*Marsilea Crenata*) turmeric (*Curcuma Longa*). The results of research conducted by Saleh and Soediro (2017) say that herbal drinks are produced through the experimental stage with the dry mix method and the crystallization method. Organoleptic (sensory) tests were used to find the attributes of taste, aroma, color, and texture of herbal drinks. All attributes are accepted and liked by 53.3% of the panelists. The nutritional content test was carried out at the Surabaya Industrial Standardization and Research Institute to find out the nutritional facts of herbal drinks. Herbal drink contains 20.62% ash, 7.31% sugar, 1.16% protein, 6.15% carbohydrate, and 38.96 kcal/100 g energy.

METHOD

Method of this research is using a qualitative descriptive method. This research was conducted in Banjarsari, Kempleng, Purwoasri, Kediri. This location was chosen because a lot of rice plants and swamps where clover (*Marsilea Crenata*) grows. This research is in the form of experiment 20 (experimental) using factorial experiment Completely Randomized Design (CRD) 1 treatment factor.

The subjects in this study is healty turmeric drinks combine in clover. Using organoleptic testing by taking variables those are color, aroma, taste, and acceptability of healthy turmeric drinks to the respondent's assessment. This research was carried out with several steps of procedures, starting with the, preparation of the processing, trials of processing making healty turmeric products and the last is organoleptic tests. Processed data in this study is an evaluation of the attributes of color, aroma, taste, acceptability of healthy drinks sedeng clover (*Marsilea Crenata*) and turmeric (*Curcuma Longa*) which have received an assessment from panelists who were carried out organoleptically. The technique of collecting consumer perception and acceptance data was also carried out using a questionnaire distributed to 10 untrained researchers as consumer representatives.

RESULT AND DISCUSSION

The process of making a healthy drink of clover turmeric by smoothing clover leaves and turmeric leaves, filtering, cooking until boiling and then adding sugar, then stirring slowly over medium heat, and speeding up the mixture when it has clotted to get fine crystals. Changes in color are affected by the crystallization temperature, the higher the temperature used, the color will turn yellow, the caramel aroma of sugar in the clover healthy drink and turmeric tastes sweet in the clover healthy drink. The acceptance variable is of great interest in the combination of 50% clover leaf K3 and 50% turmeric leaf.

Result

The first step in making clover and turmeric healthy drinks is prepare the ingredients including clover leaves, turmeric leaves, and white sugar. Measure the ingredients correctly and then continue with mashed and filtered the leaves, after the filtering process is carried out, turn on the stove over medium heat for cooking, stirring until the fluid become thick and crystallizes. The crystals will be formed into two parts, namely coarse and fine, grind the coarse to fine crystals for product uniformity. Determination of the quality of a beverage product is strongly influenced by the color of the drink itself. Because color is the main character of the product, more attractive color that produces the more enthusiast it gets.

The results of the calculation of variance (table 1.1) shows the combination of turmeric leaves and clover:

Table 1. Organoleptic Test of Color Variables

Treatment	Color Variable
K1	4,16157 c
K2	3,10257 b
K3	3,24157 b
K4	2,53867 a
K5	2,96457 a

Note: Numbers accompanied by the same letter show no significant difference to the 5% BMT test.

The best color values are in the treatment of K1, 30% clover and 70% turmeric which have very powerfull colors, K2 has less powerfull color and has not significantly different from K3 which has less powerfull colors, K4 and K5 are not significantly different. Aroma is one of the determinants of consumer interest in a beverage product, a fresh aroma makes consumers more interested when compared to a less fresh aroma. The results of the calculation of variance in table 1 show that the combination of turmeric clover has a significant effect on the aroma of the turmeric clover healthy drink.

Table 2. Organoleptic Test of Aroma Variables

Treatment	Aroma Variable
K1	3,014182 b
K2	4,214182 c
K3	2,689182 a
K4	3,264182 b
K5	2,964182 a

Note: Numbers accompanied by the same letter show no significant difference to the 5% BMT test.

From table 2 shows that the best treatment value is found in treatment K2 which has a fresher aroma when compared to treatment K1, K4, which has a fresh aroma and K3, K5 which has a less fresh aroma. After knowing the color, consumers will taste the taste of the thing that is the essence of a quality beverage product, if it is good, consumers will like it and enjoy it, if it doesn't taste good, consumers will choose other drinks that are more delicious. The results of the calculation of variance in table 2 show that the combination of turmeric clover has a significant effect on the taste of the turmeric clover healthy drink.

Table 3. Organoleptic Test of Taste Variables

Treatment	Taste Variable
K1	2,82185 a
K2	3,02185 b
K3	4,49685 c
K4	3,32185 b
K5	2,99685 a

Note: Numbers accompanied by the same letter show no significant difference to the 5% BMT test.

From table 3 shows that the best treatment is in the K3 treatment which has a better taste when compared to K2, K4, and the other treatments are less tasty. The results of the calculation of variance table 3 show that the combination of clover and turmeric has a significant effect on panelists' acceptance.

Table 4. Organoleptic Test of Acceptance Variable

Treatment	Acceptance Variable
K1	3,59405 b
K2	3,34405 b
K3	4,39405 c
K4	2,54405 a
K5	2,79405 a

Note: Numbers accompanied by the same letter show no significant difference to the 5% BMT test.

From table 4 K3 has a very good reception power, K2 has a good reception with a score below K3, K4 and K5 which are not significantly different.

Discussion

Making healthy drinks with clover and turmeric using the sugar crystallization method. Smoothing with the addition of a little water 400 ml to speed up the crystallization process. Wahyuni (2005) said that "products that get additional ingredients in the form of liquid will affect the final result and storage period of the product, and products that have high water content tend to have a short shelf life".

Filtering is to separate the filtrate from the dregs, cook until it boils to reduce the water. Add some sugar to give a sweet taste and continue cooking until it reaches the saturation point and clumps. The temperature is in the range of 95-110^{o}C. Temperature is also an important factor that needs to be considered, which when a sucrose solution has melted and evaporated to exceed its melting point of 160^{o}C it will form caramel (Mardiah et al 2019).

Kramer and Twig (1983) have classified the quality characteristics of foodstuffs into two groups, namely: physical characteristics or visible characteristics, including appearance, namely color. The green color of the sedeng healthy drink in treatment K1 was caused by the color of the carotenoids in the leaves of turmeric (*Curcuma Longa*). And the brown color is caused by the color of clover which is damaged by carotenoids due to the cooking process because at a temperature of 100°C the pigment will be damaged. The heating process also destroys the yellow pigment in corn. (Santoso et al.2008).

The results of the color variable test in the manufacture of healthy drinks with sedeng (clover and turmeric) ranged from 2.5 to 4.1 which descriptively ranged from attractive to unattractive. The combination of 30% clover and 70% turmeric, has a color that is favored by the average respondent, because of its green color, K2 is 40% clover; turmeric 60% and K3 is clover 50%; turmeric 50%, not significantly different, has a green color but this green color is not very liked by the respondents, K4 is clover 60%; turmeric 40% and K5 is clover 70%; turmeric 30%, not significantly different, has a brownish green color that is not liked by the respondents.

The aroma of healthy sedeng drinks that many respondents liked was found in the K2 treatment with a score of 4.2. The sweet aroma of sugar appears more dominant when compared to the aroma of clover and turmeric leaves, this happens because of the addition of sugar and the caramelization process before crystallization, besides the use of too high a heat temperature makes the caramel aroma stronger and eliminates the original aroma of clover and clover leaves. Turmeric itself, the more sugar there is a browning process occurs where the nature of the sugar is easy to burn (Haryanto Bambang 2017).

From the assessment data obtained, the panelists prefer the caramel aroma, which is the caramel aroma which is not so strong. In the K3 treatment with a score of 2.6 and K5 with a score of 2.9 the aroma was not liked, because of the strong caramel taste. While in the treatment of K1 with a score of 3.0 and K4 with a score of 3.2, few respondents liked it. This is due to the Maillard reaction, which is a reaction in which amino acids (proteins) react with sugar and then when heated, the aroma of the material is bound more strongly by sugar but is eventually released from the air so that it can be smelled by the five senses of smell. The more sugar it uses, the stronger it is and the sharper the aroma it produces (Anariawati, 2009).

The best treatment for the taste variable contained in the K3 treatment with a score of 4.4. In the treatment of K1 with a score of 2.8 and K5 2.9, the respondents did not like it. Differences in respondents' preferences are due to differences in composition and effects of processing. Turmeric clover healthy drink taste of clover leaf and turmeric leaf has changed due to the effects of mailard. The thermal process of raw materials or materials will make the desired product and can be unwanted, the result of the thermal process is the Mailard reaction, heating of foods containing protein, amino acids and the reaction to the Mailard reaction (Zuhra fatimah 2006).

The best acceptance is in the K3 treatment with a score of 4.3 and the treatment is received the least acceptance of respondents in the treatment of K4 with a score of 2.5 and K5 with a score of 2.7. Consumer acceptance of clover and turmeric healthy drinks is determined by looking at the color, aroma, and taste variables. The level of consumer acceptance of a product includes consumer interest in organoleptic properties. Organoleptic assessment is also called sensory assessment, which is a subjective assessment with the five senses. To find out a person's acceptance of a product, a preference test can be used (Azizah, 2012). From the organoleptic test of 15 panelists, on average, menopausal women got the most favorable K3 treatment results with an average value of 4.3 with a combination of 50% clover leaves and 50% turmeric leaves.

CONCLUSIONS

Based on the results, it can be concluded that the process of making a healthy turmeric drinks in combine with clover is depend on the proses. Mashing clover leaves and turmeric leaves, spreading, cooking by adding sugar, stirring, speeding determine the result of crystals. The color changes that occur are influenced by the temperature used. Apart from providing a sweet taste, adding sugar will also provide a caramelization effect so that the resulting taste is even more unique and refreshing. The acceptance variable is in great demand in the combination of 50% clover leaf K3 and 50% turmeric leaf.

REFERENCES

Ikhtimami, A. (2008). *Effect of Subculture Period on Saponin Levels of Javanese Turmeric Root Hair (Curcuma Longa).*University Airlangga. http://repository.unair.ac.id/id/eprint/25655.

Masyitho, D. (2016). *Propagation of Roots of Javanese Turmeric (Talinumpaniculatumgaertn.) In Variations in Concentration of Liquid Media and Growth Regulators Using Stem Explants In Vitro*. Univesity Airlangga Surabaya.

Muhallilin, I. (2012). *Root Induction From Leaf Explants of Javanese Turmeric (Curcuma Longa.) With Auxin Growth Regulator In Vitro*. University Airlangga.

Saleh, N. J., Soediro, M., Pariwisata, F., Ciputra, U., & Town, U. C. (2017). Clover Powder as Herbal Drink Makes Clover Powder Herbal Drink. *Technobuga*, *4*(1), 24–29.

Seswita, D. (2010). Optimization of Sago Processing (Metroxylon) into Biofuel. Crop Research and Development Newsletter, 16(2), 21-23. https://perkebunan.litbang.pertanian.go.id/dbasebun/asset_dbasebun/Penerbitan20160920111207.pdf

Tarwendah, I. P. (2017b). Jurnal Review: Comparative Study Of Sensory Attributes And Brand Awareness In Food Product : A Review. *Food.*