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Quality of Herbal Tea Combination Between Corn Silk and Stevia Leaf on Variation of Temperature and Drying Duration

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ABSTRACT

Herbal tea combination between corn silk and stevia leaf is a functional drink for health and refreshment. Corn silk contains antioxidant compounds or flavonoids that lower blood glucose levels. Stevia leaf as a natural sweetener contain *stevioside, rebaudioside A, rebadioside C, and dulcoside A* which are 200 to 300 times sweeter than sucrose. The aim of this study was to know the levels of glucose, antioxidant activity, and organoleptic quality of herbal tea combination between corn silk and stevia leaf with variations of temperature and drying duration. The study used experimental methods and a complete random design (crd) of two factors, factor I drying temperature 45 °C and 50 °C, factor II drying duration 2 hours and 4 hours. The results of the study showed the highest glucose of herbal tea combination between corn silk and stevia leaf on S2L2 (drying temperature 50 °C and drying duration 4 hours) is 7,212 g/100 g. The optimum antioxidant activity and best organoleptic quality of herbal tea on S1L1 (drying temperature 45 °C and drying duration 2 hours) was 83,696 % and yellow color, sweet taste, herbal tea characteristic scent, and respectively.

1. INTRODUCTION

Herbal tea is one of the functional beverage products derived from herbal plants that can help in the treatment of a disease and as a body refreshing drink (Yamin et al., 2017). Functional beverages are food products with functional characteristics that have a role in protecting or preventing diseases, treating diseases, improving optimal body function, and slowing the aging process. (Trihaditia, 2018). Herbal teas are generally derived from spices or parts of plants such as roots, stems, leaf, flowers, or bulbs, and are consumed in the form of teas that are boiled or boiled with boiling water (Syawal & Laeliocattleya, 2020). One of the innovations that can be made herbal tea from natural ingredients is corn silk as a functional drink that nourishes the body.

Corn silk is a portion that has a shape such as hair or yellow thread and is a collection of the head of the female flower of the corn plant. Corn silk is less utilized in public life, but has many benefits such as the content of antioxidant compounds or flavonoids that can lower blood glucose levels. Antioxidants from natural materials are able to neutralize radicals by giving one electron to the radical to make it non-radical, so it is important to prevent cell damage from free radicals (Hartanto et al., 2018). Antioxidant activity is influenced by many factors such as lipid content, antioxidant concentration, temperature, oxygen pressure and chemical components. The process of antioxidant inhibition varies depending on the chemical structure and variation of the mechanism is a reaction with the lipid free radicals, which form the non-active product (Syawal & Laeliocattleya, 2020).

On corn silk it also contains 2,5 % fatty acids, 0,12 % asparagus oil, 3,8 % rubber, 2,7 % resin, 3,18 % saponins, and 0,05 % alkaloids. Corn silk also contains B vitamins (niasin, riboflavin, and timine) and is rich in minerals. (abu, alumunium, korm, koblat, zat besi, magnesium, mangan, fosfor, kalium, selenium, dan natrium) (Rohmadianto et al., 2019). According to research (Akbar et al., 2019), there are three concentrations of corn silk tea, namely 20, 30 and 40 %. The best organoleptic test result formula is a 40 % corn silk extract with a water, ash, protein, fat, and carbohydrate content of 99.6 %, 0.20 %, 0.14 %, 0 %, and 0.06 % respectively, while the total flavonoid content is 0.03 %. The chemical content of corn silk tea with the addition of stevia leaf is potentially used as a functional drink alternative. In the making of this herbal tea of corn silk there are several factors that determine the quality of food ingredients such as the type of sweetener. There are two types of sweeteners is natural and artificial. Sand sugar or sucrose is a type of natural sweetener that is widely used, but has a high calorie content that can cause obesity and diabetes (Handayani et al., 2017). In an effort to replace sucrose as a drink sweetener by using natural sweeteners such as stevia leaf to be combined in the making of herbal tea corn silk.

The leaf of stevia (*Stevia rebaudiana*) are one type of plant that can be used as a natural sweetener that has a low calorie content and can replace sucrose. Stevia contains *stevioside*, *rebaudioside A, rebaudioside C,* dan *dulcoside A* which are 200-300 times sweeter than sucrose. Stevia has many benefits for the body such as lowering blood pressure, improving kidney function, and acting as an antioxidant (Handayani et al., 2017). Phytochemical compounds in stevia leaf are alkaloids, saponins, tanins, phenolics, flavonoids, triterfenoids, steroids, and glycosides (Tristanto et al., 2017). The sweetness of the stevia plant is caused by three components stevioside (3-10 % of the dry leaf weight), rebaudioside (1-3 %), and dulcoside (0,5-1 %) (Wuryantoro & Susanto, 2014).

Corn silk has many benefits for the health of the body, one of which is beta-sitosterol which is useful for reducing blood cholesterol levels, reducing urine, lowering high blood pressure, acute and chronic kidney infections (Garnida, 2018). However, corn silk also has disadvantages such as a very low sweetness, so this research was carried out by combining stevia leaf as a low-calorie natural sweetener that is healthy for the body. Apart from being used as a low-calorie natural sweetener, stevia is also beneficial for body health, such as stabilizing blood sugar levels in diabetics, stabilizing blood pressure in hypertensive patients, increasing calcium absorption in osteoporosis sufferers, helping symptoms of gingivitis and inhibiting the growth of dental plaque, treating hair dullness and scalp disorders, as well as preventing wrinkles on the face (Edi & Mardiani, 2015). However, stevia leaf have drawbacks, one of which can leave a bitter taste on the tongue after consumption. This may make some people uncomfortable, and can reduce a person's attractiveness to enjoy it. One way that can be done to process the herbal tea combination between of corn silk and stevia leaf is with the process of drying.

Drying is one of the processes of producing or removing most of the water content of a material through the application of heat energy. Drying can reduce water levels thus inhibiting the growth of bacteria, fungi, and reducing the activity of enzymes that can damage materials, thus extending the storage and preservation of foods (Yamin et al., 2017). The drying method can be done in two ways: drying naturally with sunlight and artificially with the help of a dryer such as the oven. The variation of drying temperature and drying duration in herbal tea making can affect the antioxidant content, glucose levels, and organoleptic quality of herbal tea. According to research (Putri, 2016). There is a difference in the antioxidant activity of the tea combination of corn silk and kelor leaf with the highest variation in the temperature of drying in the treatment of the corn silk 0.7 g and the leaf of the kelor 1.3 g with a drying temperature of 55 ℃ with the

antioxidant content of 85,5 %, while the lowest antioxidant activity is found in the dryer technique with a temperature of 45 ℃ of 42.8 %. With the resulting organoleptic qualities of the young brown color, flavor, smell of langu, and receptivity discovery likes. According to research (Garnida, 2018), stated that the life of the chosen corn silk is 8 weeks in both sweet corn and hybrid corn, chosen drying time is 5 hours, with a drying temperature of 60 °C resulting in a 4.31 % ash rate and a vitamin C level of 1.40 %. The interaction of the drying temperature and the type of corn affects the levels of vitamin C, color, taste, and aroma of the herbaceous tea of corn silk. All drying techniques have their respective advantages and weaknesses over antioxidant activity and organoleptic qualities, so you must be skilled and careful in determining the temperature variation and drying duration to be used.

Based on reference searches, research on herbal tea with a combination of corn silk and stevia leaf has not been found in Indonesia, however there have been previous studies on corn silk herbal tea combined with other ingredients such as rosella (Rohmadianto et al., 2019), moringa leaf (Putri, 2016), lime and honey (Trihaditia, 2018). By looking at the content of corn silk and stevia leaf which are beneficial for the health of the body, a herbal tea research was carried out using a combination of corn silk and stevia leaf. The aim of this study was to know the qualities of the herbal tea between corn silk and stevia leaf on variations of temperature and drying duration.

2. MATERIALS AND METHODS

2.1. The Time and Place of Research

The study was an experimental study to test glucose content, antioxidant activity, and organoleptic qualities with variations of drying temperature and drying duration compared to herbal tea combination between with corn silk and stevia leaf. The research site of the making of herbal tea combination between of corn silk and stevia leaf as well as organoleptic quality testing was carried out in Laboratory 3 Biology Faculty of Teacher and Education Sciences University Muhammadiyah Surakarta, while the testing of glucose levels and antioxidant activates herbal tea blend of corn silk and stevia leaf were conducted in the Laboratory of Technology and Food Industry Faculty Technology and Industry University Slamet Riyadi Surakarta. Research activities will take place from February to March 2023.

2.2. Material

The tools used in this study include: digital scale, oven, measuring glass, beaker glass, reaction tube, reacting tube shelf, a micropipet, spectrophotometer, vortex, hot palate, water bath, volumetric flask.

The ingredients used in this study include: corn silk, stevia leaf, water, tea bags, label paper, aluminum foil, arsenomolybdat reagents, nelson reagens, glucose solution, aquadest, filter paper, and DPPH solution.

2.3. Making Herbal Tea Samples

The preparation of herbal tea samples begins with scrubbing corn silk and stevia leaf for 24 hours at a temperature of 27 °C. Then the material is dried using the oven according to the treatment S1L1 (drying temperature 45 °C and drying duration 2 hours), S1L2 (drying temperature 45 °C and draying duration 4 hours), S2L1 (drying temperature 50 °C and draying duration 2 hours), and S2L2 (drying temperature 50°C and draying duration 4 hours). After drying the material is cut small to fine and weighed in the proportion of 1 g of corn silk : 1 g stevia leaf on

each treatment. Herbal tea is then packed in a 5.5 x 7 cm bag, and herbal tea is baked at a temperature of 100 °C within 1-2 minutes.

2.4. Method of Collecting Data

Data collection methods in this study are (1) experimental methods by carrying out experimental preparation of herbal tea of corn silk and stevia leaf, (2) observation methods by observing and recording the results of changes in color, taste, aroma, and receptivity of the herb tea of corn silk and stevia leaf, (3) library methods to help fill in information from references to previous books, journals, scientific works, and scripts, (4) documentation methods for embodying the process to the research results.

2.5. Experimental Design

The experimental design of the study uses the experimental method using the Complete Random Plan (RAL) 2 factor treatment with 3 repetitions. The treatment factors include:
Factor I : Variation in drying temperature (S)
S1 : Temperature 45 ℃
S2 : Temperature 50 ℃

Factor II : Variation in drying duration (L)
L1 : 2 hours
L2 : 4 hours

Thus, the herbal tea preparation combination between of corn silk and stevia leaf with variations of drying temperature and drying duration is as follows:

S1L1 : Drying temperature 45 ℃ and drying duration 2 hours
S2L1 : Drying temperature 50 ℃ and drying duration 2 hours
S1L2 : Drying temperature 45 ℃ and drying duration 4 hours
S2L2 : Drying temperature 50 ℃ and drying duration 4 hours

2.6. Stage of Research Activity

2.6.1. Glucose Level Testing

Weigh 1 g of herbal tea, and in the seduce with 100 ml of boiling water. To make a dilution of the standard solution of glucose, is tubes 1 (0 ml glucosa + 10 ml aquadest), tubes 2 (2 ml glucosis + 8 ml aquadest), tubes 3 (4 ml glucoza + 6 ml aquadest), tubes 4 (6 ml glucoma + 4 ml aquadest), tube 5 (8 ml glucose + 2 ml aquadest), and tube 6 (10 ml glucose + 0 ml aquadest). Then vortex the standard glucose solution to homogeneity. Take 1 ml of the standard solution from each reaction tube, and take 1 ml of the dissolved tea solution. Add 1 ml of Nelson reagent to each tube and homogenize. Close the reaction tube with aluminum foil, boil for 20 minutes, and cool. After cooling, add 1 ml of the arsenomolybdat reagent and homogenize. Add 7 ml of aquadest solution to each reaction tube and homogenize. Test on a spectophotometer with a wavelength of 540 nm and read its absorbance.

2.6.2. Antioxidant Activity Testing

Prepare a sample of herbal tea to be tested. Stir a sample of herbal tea using 100 ml of hot water in a glass cup, then cool. Take 0,2 ml of an herbal tea sample and place it in a reaction tube.

Add 3,8 ml of DPPH solution and homogenize. Close the reaction tube with aluminum foil, then incubate in a dark space and close for 30 minutes. Incubate the solution in the vortex to become homogeneous. Test it on a spectrophotometer with a wavelength of 515 nm and read its absorption.

2.6.3. Organoleptic Quality Testing

Determined respondents of 15 people to evaluate the herb tea of corn silk and stevia leaf objectively. Provide an organoleptic assessment quiz to the researcher and provide instructions on how to fill out the quiz. Ask the researcher to observe and evaluate each sample tested for color, flavor, smell, and receptivity on each sample tested. The completed questionnaires are returned to the researcher for processing and analysis.

3. RESULTS AND DISCUSSION

3.1. Level Glucose dan Antioxidant Activity

The results of the glucose levels and the antioxidant activity of the herbal tea combination between of corn silk and stevia leaf with variation of drying temperature and drying duration are presented in Table 1.

Table 1 The results of the glucose levels and the antioxidant activity of the herbal tea combination between of corn silk and stevia leaf

Treatment	Glucose (reducing sugar) Gram/100 gram	Antioxidant Activity (%)
S1L1	5.11*	83.696**
S1L2	5.5085	80.9495
S2L1	6.0835	76.59
S2L2	7.212**	44.1135*

Note:
*Lowest Content,
**Highest Content

Information:

S1L1 (Drying temperature 45 ℃ and drying duration 2 hours)
S1L2 (Drying temperature 45 ℃ and drying duration 4 hours)
S2L1 (Drying temperature 50 ℃ and drying duration 2 hours)
S2L2 (Drying temperature 50 ℃ and drying duration 4 hours)

Table 1 showed that herbal tea combination between of corn silk and stevia leaf with drying temperature variations and drying duration had results of different levels of glucose and antioxidant activity. The highest glucose levels of 7,212 g/100 g were found in treatment S2L2 (drying temperature 50 °C and drying duration 4 hours), while the lowest glucose levels of 5,11 g/100 g were found in treatment S1L1 (drying temperature 45 °C and drying duration 2 hours). The highest content of antioxidant activity of 83,696 % was found in treatment S1L1 (drying temperature 45 °C and drying duration 2 hours), while the lowest antioxidant activity content of

44,1135 % was observed in treatment S2L2 (drying temperature 50 °C and drying duration 4 hours).

Testing the glucose level in the herbal tea combination between of corn silk and stevia leaf with drying temperature variations and drying duration is carried out using the Nelson-Somogyi method. Based on the table 1, glucose content at treatments S1L1 (drying temperature 45 °C and drying duration 2 hours) and S1L2 (drying temperature 45 °C and drying duration 4 hours) showed the following successive glycose levels as 5.11 g/100 g; and 5.5085 g/100 g. In treatment S2L1 (drying temperature 50 °C and drying duration 2 hours) and S2L2 (drying temperature 50 °C and drying duration 4 hours) showed glucose levels in succession as follows 6,0835 g/100 g; and 7,212 g/100 g. The highest levels of glucose were found in treatment S2L2 (drying temperature 50 °C and drying duration 4 hours) of 7,212 g/100 g, while the lowest levels were at treatment S1L1 (drying temperature 45 °C and drying duration 2 hours) of 5,11 g/100 g.

Based on the results of statistical tests Two Way Anova obtained an R square value showing 0.941 > 0,05, which means there is no significant influence of temperature variation and duration of drying on the glucose levels of the herbal tea combination between of corn silk and stevia leaf. The results of further testing of the concentration of the glucose content of the herbal tea combination between of corn silk and stevia leaf with the Shapiro wilk method obtained the result Asymp Sig. 0,242 > 0,05, it can be stated that H0 is received, meaning there is no influence variation of drying temperature and drying duration.

The cause of the increased levels of glucose in herbal tea is a combination between of corn silk and stevia leaf due to the influence of temperature and the duration of drying of the ingredients. This drying function reduces the level of water, so the tea products of corn silk and stevia leaf can be stored for a long period of time. The higher the temperature of drying and the longer the drying time, the higher the levels of glucose produced. According to (Sundari et al., 2015), The high or low nutritional content of a material depends on the type of material and the temperature used. And in line with research (Engka et al., 2016), The sugars that are dissolved in hot water are called invert sugars, which means that some of the sugars will be broken down into glucose and fructose. Heating done slowly and for a long time will produce more inverter sugar compared to quick and short heating.

The highest levels of glucose in the herbal tea combination between of corn silk and stevia leaf of 7,212 g/100 g were obtained of the drying temperature factor of 50 °C and drying duration 4 hours. The boiling and drying of the saccharose solution results in the sucrose undergoing the reverse or breakdown of saccharoses into glucose and fructose due to the influence of acid and heat which increase the solubility of sugar. In line with research (Prastianti et al., 2016), The highest sugar reduction level (7.9922 g/100 g) is obtained at the ratio of the sugar concentration factor (78.65 %) and the drying temperature (89.99 °C). The variation of such factors can result in the reduction of sugar levels in dried pondoh snakefruit sweet to higher than fresh snakefruit. And backed by research (Wilberta et al., 2021), the average sugar analysis results reduced in nira palm by 5.18 % and in ants sugar palm by 10.31 %. This occurs because of the process of eating, so there is an increase in the sugar content reduction in comparison with nira palm before cooking. Reduction sugar changes can be influenced by various factors, such as heating, where the result of the heating process results in changes in the chemical structure as well as the composition of nira and myrtle palm sugar. Both studies showed that increased temperature and duration of drying resulted in increased levels of reduced sugar as well.

Table 1 also shows the results of antioxidant activity testing on a herbal tea combination between of corn silk and stevia leaf with srying temperature variations and drying duration

performed by the DPPH method. On treatment S1L1 (drying temperature 45 °C and drying duration 2 hours) and S1L2 (drying temperature 45 °C and drying duration 4 hours) showed the results of the antioxidant activity content in succession were as follows 83,696 %; and 80,9495 %. On treatment S2L1 (drying temperature 50 °C and drying duration 2 hours) and S2L2 (drying temperature 50 °C and drying duration 4 hours) showed results of antioxidant activity content in succession as follows: 76,59 %; and 44,1135 %. The highest content of antioxidant activity was found at treatment S1L1 (drying temperature 45 °C and drying duration 2 hours) of 83,696 %, while the lowest frame of antioxidant activity was found in treatment S2L2 (50 °C drying temperature and drying duration 4 hours) of 44,1135 %.

Based on the results of statistical tests Two Way Anova obtained an R square value showing 0.981 > 0.05, which means there is no significant influence of drying temperature variation and drying duration on the antioxidant activity content of the herbal tea combination between of corn silk and stevia leaf. The results of further testing of the concentration of antioxidant activity content of the herbal tea combination between of corn silk and stevia leaf with the method of Shapiro wilk obtained results Asymp Sig. 0,592 > 0,05, it can be stated that H0 was received which means that it is not subject to the influence of temperature variation and duration of drying.

The high test results for antioxidant activity are due to the fact that corn silk contains anti-oxidant compounds such as flavonoids, alkaloids, tanins, and saponins. According to (Kusriani et al., 2017), stated that the chemical content contained in corn plants includes alkaloids, saponins, tanins, flavonoids, phenols, steroids, glycosides, terpenoids, proteins, and minerals. Phenol compounds play a high role in antioxidant activity and sunscreen. Spruce samples and corn silk are potentially a source of antioxidants and natural sunscreen. This is proven in research (Kurnia et al., 2021), it is stated that the ethanol extract of corn silk has antioxidant activity using the DPPH method. The IC50 value of ethanol extracts of corn silk of 7.73 ppm is classified as an antioxidant compared to vitamin C. On research (Aulyawati et al., 2021), It is stated that the ethanol extract of corn silk has antioxidant activity using the DPPH method. The IC50 value of ethanol extracts of corn silk of 7.73 ppm is classified as an antioxidant compared to vitamin C.

The main cause of the decline in antioxidant activity is due to the temperature factor in ovulation. At treatment S1L1 with a forging temperature of 45 °C is the most optimal temperature for producing the highest antioxidant activity. High antioxidant activity can occur due to the optimal temperature, when the drying process exceeds the optimum temperature then the activity of antioxidants will decrease because it can make the enzyme polyphenolic oxidase to experience inactivation. In line with research (Wiratara & Ifadah, 2022), the higher the drying temperature, the higher the enzyme polyphenolic oxidase that undergoes inactivation, affecting the decrease in enzymatic activity and the decreased phenolic damage that occurs.

Too high drying temperatures and too long drying times are also not good for antioxidant activity. The higher the drying temperature used, the lower the antioxidant activity, and it can damage the activity of antioxidants on the simplex. In line with research (Dewi et al., 2022), stated that the use of too high temperatures and too long drying times can cause the occurrence of changes in the characteristics and chemical components contained in materials, such as damage to compounds acting as antioxidants, while too low temperatures and too short drying times are not optimal to inactivate the polyphenolase enzyme so that the polyfenolase enzymes often convert polyphenols into teaflavin and tearubigine compounds, resulting in the antioxidant composites produced are still low. And strengthened by research (Yamin et al., 2017), it has been stated that too long a drying time will decrease antioxidant activity because antioxidants are damaged by heating.

Another factor that causes low antioxidant activity is the sliding process. The function of this peeling process is to lower the water level on corn silk and stevia leaf. The longer the process is used, the lower the antioxidant activity contained in the herbal tea combination between of corn silk and stevia leaf. This is due to the presence of compounds with antioxidant activity that are lost during the peeling process. The longer the sliding time, shows an increasingly decreasing antioxidant activity, this is due to the existence of sources of antioxidants that are lost during the slitting process, and the chemical changes experienced by the source of antioxidants (Kusumaningrum et al., 2020).

3.2. *Organoleptic Quality*

Organoleptic qualities include color, taste, scent, and acceptability to the herbal tea combination between with corn silk and stevia leaf with variations of drying temperature and drying duration presented in Table 2.

Tabel 2. Organoleptic test results include color, taste, scent, and acceptability to the herbal tea combination between of corn silk and stevia leaf.

Treatment	Aspect			
	Color	Taste	Scent	Acceptability
S1L1	Dark yellow	Sweet	Somewhat Typical Herbal Tea	Like
S1L2	Brown	Very sweet	Somewhat Typical Herbal Tea	Like
S2L1	Brown yellow	Very sweet	Special Herbal Tea	Quite like
S2L2	Brown	Very sweet	Special Herbal Tea	Quite like

Information:
S1L1 (Drying temperature 45 ℃ and drying duration 2 hours)
S1L2 (Drying temperature 45 ℃ and drying duration 4 hours)
S2L1 (Drying temperature 50 ℃ and drying duration 2 hours)
S2L2 (Drying temperature 50 ℃ and drying duration 4 hours)

From 15 respondent who tested organoleptic qualities (color, taste, aroma, and receptivity) of an herbal tea combination between of corn silk and stevia leaf with variations in drying temperature and drying duration showed varying results in each treatment. The color of the herbal tea combination between of corn silk and stevia leaf in the treatment S1L1 (drying temperature 45 °C and drying durration 2 hours) is dark yellow, in the process S2L1 (50 °C drying temperature and drying duration 2 hours) it is brown-yellow, whereas in the treatments S1L2 (drying temperature 45 °C and drying duration 4 hours) and treatment S2L2 (drying temperature 50 ℃ and drying duration 4 hours) it is brown. The results of the research on herbal tea flavors combined with corn silk and stevia leaf that the treatment S1L1 (drying temperature 45 °C and drying duration 2 hours) had a sweet taste, whereas the treatments S1L2 (drying temperature 45 °C and drying duration 4 hours), treatments S2L1 (50 °C drying temperature and drying duration 2 hours), and treatments S2L2 (drying temperature 50 °C and drying duration 4 hours) were very sweet. The aroma produced by the herbal tea combination between of corn silk and stevia leaf in each

treatment is different. Treatments S1L1 (drying temperature 45 °C and drying duration 2 hours) and S1L2 (drying temperature 45 °C and drying duration 4 hours) have a rather typical aroma of herbal tea, whereas treatments S2L1 (drying temperature 50 °C and drying duration 2 hours), and treatments S2L2 (50 °C drying temperature and drying duration 4 hours) have a characteristic aroma of herbal tea. And the acceptability of the herbal tea combination of corn silk and stevia leaf from 15 respondents that is in the S1L1 treatment (drying temperature 45 °C and drying duration 2 hours) and treatment S1L2 (drying temperature 45 °C and drying duration 4 hours) had a liking power, whereas in treatment S2L1 (drying temperature 45 °C and drying duration 2 hours) and treatment S2L2 (drying temperature 50 °C and drying duration 4 hours) had good acceptability.

The organoleptic test results for color, taste, aroma, and acceptance of herbal tea combination between with corn silk and stevia leaf with variations in temperature and drying duration can be seen in Figure 1.

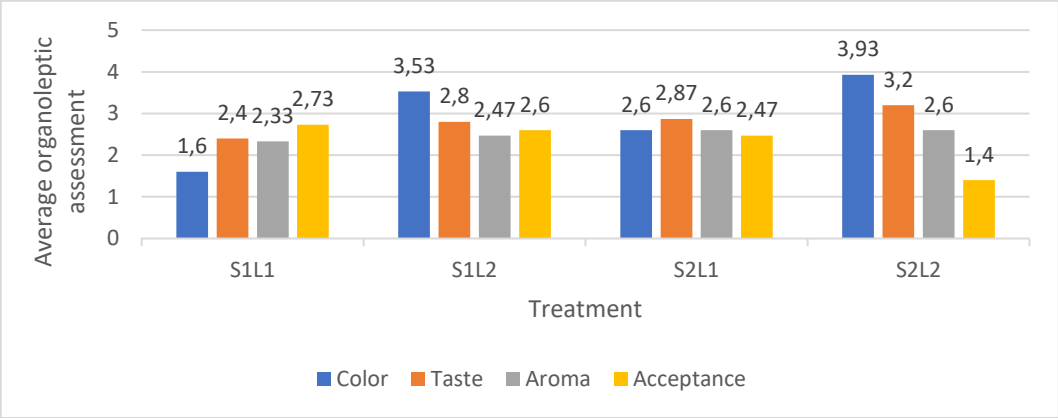

Figure 1. Histogram of Color, Taste, Aroma, and Acceptance Organoleptic Quality Test

Based on Figure 1, the results of the organoleptic quality assessment of 15 respondents produced the highest color for the herbal tea combination of corn silk and stevia leaf in the S2L2 treatment with brown color, while the lowest color assessment was in the S1L1 treatment with dark yellow color. The determination of temperature and duration of drying has a great influence on the color of the produced herbal tea. Herbal tea with longer drying times and high drying temperatures have a more concentrated color compared to a shorter drying times and lower drying temperatures. The color of corn silk tea is caused by flavonoid compounds due to the distinctive properties of flavanoids that can be soluble in water, in addition, the temperature of drying also has a real effect on the color of the corn silk (Garnida, 2018). This is due to the chlorophyll and caretenoid pigments in stevia leaf, and the increased content of tannins if the drying time is longer. In accordance with research results (Hutasoit et al., 2021), it is stated that the colors of T1, T2, T3, and T4 in the cascara teas are consecutively becoming more and more concentrated brown, this is due to the increased tannin content of the teas with a long drying time. According to (Ramlah, 2017), it is stated that the highest levels of flavonoids can be seen from the color of the sediment produced. The more concentrated color indicates high levels of flavonoids with high antioxidant activity. Flavonoids can give a dull yellow color to the shrimp and will turn into dark brown when further oxidation reactions occur (Rohmadianto et al., 2019).

Herbal tea is a combination between of corn silk and stevia leaf with drying temperature variations and drying duration has 4 degrees of taste which is quite sweet, sweet, very sweet, and

bitter sweet. The results of the research on herbal tea flavor combination of corn silk and stevia leaf with the highest score in the S2L2 treatment with a very sweet taste, while the lowest score was in the S1L1 treatment with a sweet taste. This shows that the longer and higher the drying temperature is carried out, the sweeter the resulting sweetness will increase even to provoke the sweetness of bitterness. In line with research (Rohmadianto et al., 2019), stated that the longer the drying time, the corn flavor will be more pronounced because the corn flavor is influenced by the content of antioxidant compounds such as tannins, saponins, and flavonoids. The bitter taste in herbal teas is due to the presence of chemical compounds in the form of tannins and saponins in corn silk or stevia leaf.

The results of the research on the aroma of herbal tea a combination of corn silk and stevia leaf with the highest scoring results in the S2L1 and S2L2 treatments with a distinctive aroma special herbal tea, while the lowest rating was in the S1L1 treatment with a distinctive aroma somewhat typical herbal tea. This shows that the higher the drying temperature used, the more characteristic the aroma of herbal tea is produced. The aroma in the herbal tea of corn silk and stevia leaf can be produced by evaporating volatile compounds. This is in line with the results of the reserach (Garnida, 2018), the aroma produced at the drying temperatures of 60 °C and 70 °C is the aroma of corn, this is due to the optimal output of volatile compounds contained in corn silk. From the results of the study, it can be said that the longer the drying time can more it affects the color and smell of tea. According to (Adri & Hersoelistyorini, 2013) the drying process causes the catechin compounds in the tannins to be oxidized which produces a fragrant aroma in the tea.

Acceptability of herbal tea combination corn silk and stevia leaf involving 15 respondent with the highest rating results in the S2L1 treatment with like acceptance, while the lowest rating was in the S2L2 treatment with acceptance quite like. The longer and higher the drying temperature is done, the lower the acceptability of herbal tea combination between with corn silk and stevia leaf because it has a sweeter to bitter sweet taste. This is due to differences in the color and taste of the herbal tea combination between with corn silk and stevia leaf, but there is a slight similarity in the aroma as seen from the slight difference in numbers. In terms of acceptability, quite like it is caused by the appearance of a bitter taste due to the long drying process, so that the acceptability of the S2L1 and S2L2 treatments decreases. The bitter taste arises due to the content of tannin and saponin compounds in corn silk or stevia leaf. However, it can be said that the treatment stated that the researcher liked the herbal tea combination between with corn silk and stevia leaf. In the results of the researcher's coverage, herbal tea products combination between with corn silk and stevia leaf can be used as an alternative to tea, accompanied by an introduction to the community about the potential of corn silk and stevia leaf to be used as herbal teas as functional drinks that are beneficial for the health of the body. This is in line with research (Widyantari, 2020), states that functional drinks have the main function of providing nutritional intake and sensory satisfaction such as good taste and good texture. And equipped with tertiary functions such as probiotics, increasing intake of certain vitamins and minerals, increasing body stamina, and reducing the risk of certain diseases.

4. CONCLUSIONS

The highest glucose of herbal tea combination between corn silk and stevia leaf on S2L2 (drying temperature 50 °C and drying duration 4 hours) is 7,212 g/100 g. The optimum antioxidant activity and best organoleptic quality of herbal tea on S1L1 (drying temperature 45 °C and drying duration 2 hours) was 83,696 % and yellow color, sweet taste, herbal tea characteristic scent, and respectively. So that the most optimal combination treatment is S1L1 with a low glucose content

of 5.11 g/100 g, antioxidant activity 83,696 %, and organoleptic quality yellow color, sweet taste, herbal tea characteristic scent, and respectively.

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