

Making Instant Spiced Coffee Drink to Prevent Covid-19

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ABSTRACT

Spicy drinks are derived from types of spices such as turmeric, ginger, kunci, kencur, temulawak, galangal, and so on have been widely known by the Indonesian people as herbs and fresh drinks. However, there are still many who do not like this type of drink because of the distinctive and sharp aroma and taste of the spices. To make variations of spiced drinks so that they can be more accepted by the public, practical, and have a higher selling value, innovations can be made by adding ingredients that can improve the taste, namely coffee and creamer so that the processed product is called "Instant Spiced Coffee". The purpose of this research is to find out: 1) the level of preference of the panelists towards the finished instant spiced coffee which includes texture, color, aroma, and taste; 2) nutritional content of instant spiced coffee per 100 grams, and 3) the selling price of instant spiced coffee per sachet. The type of research is experimental, data collection using observation, and preference testing techniques. The analysis technique for organoleptic test results is quantitative descriptive to determine nutritional content based on laboratory tests which include Energy, Carbohydrates, Fat, Calcium, Protein, Vitamin A, Vitamin C, and Antioxidants, as well as to calculate the selling price using the standard cost method. The results showed: 1) the panelists' preference for color was 93.33% likes, 93.33% likes aroma, 93.33% likes taste, 86.67% viscosity, and 93.33% solubility; 2) the nutritional content per 100 grams is Energy: 208.50 kcal, Carbohydrates 44.80%, Fat 2.15%, Calcium 89.50 mg, Protein 1.38%, Vitamin A 42.50 grams, Vitamin C 38, 10 grams, and Antioxidants 198.20 mek, and 3) the selling price of instant spiced coffee is Rp. 2.500,- (per sachet).

Keywords— Instant Drinks, Spices, Coffee, Creamer, Covid-19

1. INTRODUCTION

Currently, the world is experiencing the 2019 coronavirus pandemic which has infected millions of people, and hundreds of thousands of people are died [1]. The coronavirus is attacking the respiratory system and causing severe respiratory infections and multiorgan failure [2]. The mortality rate will be higher if the patient also has a congenital disease [3] and is elderly [4].

Scientists and health experts are trying to find drugs and vaccines that can stop this virus [5], but so far no drug can be used as an antiviral. Therefore, the best way to prevent coronavirus is to avoid the causative factors [6] and increase the body's resistance to a healthy lifestyle and eat nutritious foods with adequate nutritional intake, such as vegetables and fruits that can boost the immunes.

Protein foods, such as eggs, fish and lean meats, nuts, and spices are recommended too [7].

In Indonesia, apart from being used as a cooking ingredient, spices are also used as herbal drinks that functioned as medicinal drinks [8]. Spices contain phytochemicals that can reduce damage in body cells and fight inflammation [9].

Currently, many spiced drinks are produced in instant form, but there are still many people who don't like spice because of the distinctive sharp aroma and taste of the spices. Instant powder drinks are drinks that are made from fruits, spices, seeds, and leaves that can be drunk by brew using boiled water, it can be enjoyed both cold and hot [10]. Instant drinks in the form of sachets are currently increasing in demand by the public, because of the ease and practicality of the serving.

The process of making instant powder can be done in traditional and modern ways, depending on the technology used. Instant powder with modern processing can be done using a spray dryer, freeze dryer, and others [11].

To make variations of spiced instant drinks so that they can be more accepted by the public, other ingredients can be added to improve the taste. One of the ingredients that can be used is coffee and creamer so the processed product is called instant spice coffee. The addition of coffee and creamer ingredients is expected to add flavor and be accepted by the public by utilizing the properties of spices to increase endurance and provide variations in texture, color, aroma, and taste so that they will be more attractive to the public and they will have a higher selling value and add more nutritional value.

Coffee is one of the most popular drinks among people throughout Indonesia and even in the world. Coffee can be useful as an antioxidant [12] because of its high chlorogenic acid content. In addition, coffee can stimulate brain performance and cancer. For coffee lovers who have a high tolerance for caffeine, it can make the body feel fresher and warmer [13] and even prevent prostate cancer [14]. Several studies reveal the benefits of coffee consumption is proven that coffee can prevent chronic diseases. These include reducing the risk of type 2 diabetes [15], reducing the risk of liver damage in people at high risk of developing liver disease [16], and reducing the risk of developing Alzheimer's [17].

Creamer Powder (Non-dairy creamer/NDC) is a fat-in-water emulsion product that is processed through hydrogenated vegetable oil. The form of this product is divided into powder and liquid. Because creamer is not a dairy product, it does not contain lactose, therefore creamer can be consumed by anyone, including people with lactose intolerance [18]. Creamer serves to develop the desired color change and give a more taste experience to which creamer is added. The right formulation will produce a cream-like flavor and texture that is preferred by consumers [19].

The specific objectives of this study were: 1) to determine the panelists' preference for instant spiced coffee, which include: color, aroma, taste, viscosity, and solubility; 2) knowing the nutritional content of instant spiced coffee per sachet; 3) finding out the selling price of instant spiced coffee per sachet.

2. METHOD

This research is a trial. The trial was used to find the Instant Spice Coffee formula so that will meet the criteria for instant spiced coffee which include texture, color, aroma, and taste, and to determine the panelists' preference level for the finished instant spiced coffee which includes color, aroma, taste, viscosity, and solubility; nutritional content of instant spiced coffee per sachet; and the selling price of instant spiced coffee per sachet.

The data collection technique used is observation, namely by making direct observations on the object of study and preference testing using human senses to measure the texture, appearance, aroma, and flavor of food products. The aim is to assess several aspects including color, flavor, aroma viscosity, solubility, and preference. The instrument was developed using an organoleptic test

instrument in the form of a preference test which was given to panelists to assess the product based on preference for color, aroma, taste, viscosity, and solubility.

3. RESULTS AND DISCUSSION

3.1. Instant Spiced Coffee Formula

Based on the results of the 1st, 2nd, and 3rd trial tests, the best formula was "Instant Spiced Coffee" which was used as an ingredient to be tested on at least 30 panelists: Gajah ginger 1.000 g, emprit ginger 250 g, lemongrass 230 g, galangal 200 g, clove 4 g, cardamon 4 g, cinnamon 18 g, sugar 2.000 g, salt 2 g, water 1.500 ml, coffee 125 g, and creamer 200 g.

3.2 Hedonic Test Results

3.2.1. Color

The results of the panelists' assessment of the color "Instant Spice Coffee" are presented in the form of a pie chart in Figure 1.

The results of the panelists' assessment of the criteria for the color of instant spiced coffee were 33.33% of the panelists chose very much like it, 60% chose to like it, and 6.67% chose it less. It can be concluded that 93.33% of the panelists like the color of instant spiced coffee. This is possible because the color combination of the basic ingredients used, namely spice powder, coffee, and creamer, becomes a brownish color.

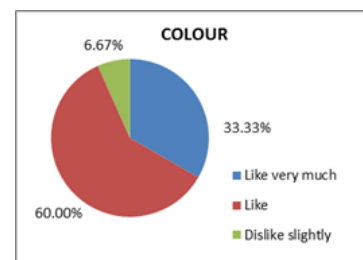


Figure 1. Hedonic Test of Color

The assessment of dislike for the color of instant spiced coffee is 6.67%, which is possible because the brownish color (a bit dark) becomes less attractive. The brown color is due to the basic ingredients used, namely spices which are rich in anti-oxidants so that it gives a slightly blackish brown color due to the heating process during cooking and the addition of coffee and creamer ingredients. In addition, the Maillard process also causes the color of the product to turn brown due to the process between sugar and amino acids [20].

3.2.2. Aroma

Aroma is an important factor in influencing product selection. The results of the panelists' assessment of the aroma of "Instant Spiced Coffee" are presented in the form of a pie chart in Figure 2.

The results of the panelists' assessment of the criteria for the aroma of instant spiced coffee are as many as 50% of panelists choose very like, 43.33% choose to like, and 6.67% choose less. It can be concluded that 93.33% of the panelists liked the aroma of instant spiced coffee.

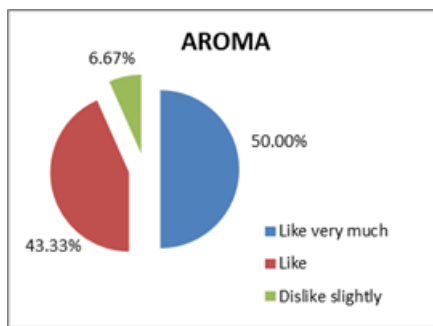


Figure 2. Hedonic Test of Aroma

This is possible because of the aroma combination of the basic ingredients used, namely spice powder, coffee, and creamer into a distinctive aroma [21]. Ginger, cinnamon, lemongrass, cardamom, cloves, contain essential oils that contain a distinctive aroma.

The addition of ginger was also reported to have a significant effect on the preference for the aroma of spiced coffee syrup because the main component of fresh ginger is a ketone homologous compound known as gingerol. Prolonged heating in the manufacture of instant spiced coffee causes changes in gingerol compounds to shogaol and maximizes the extraction of compounds present in ginger to make the aroma stronger [22].

The panelists' preference for the aroma of instant spiced coffee is also possible because there is some addition of coffee, caffeine which is the most important compound in coffee functions as an element of taste and aroma in coffee beans [23]. Coffee beans contain volatile and non-volatile compounds. Volatile compounds that affect aroma include aldehydes, ketones, and alcohols, while non-volatile compounds that can affect aroma include chlorogenic acid, sugar and trigonelin [24].

The rating of dislike for the aroma was 6.67%, it was possible because the aroma of spices was sharp and the panelists were not used to coffee with added spices.

3.2.3. Taste

The results of the panelists' assessment of the taste of "Instant Spice Coffee" are presented in the form of a pie chart in Figure 3

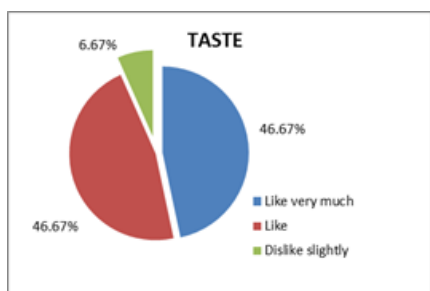


Figure 3. Hedonic Test of Taste

The results of panelists' assessment of the criteria for the taste of instant spiced coffee were as many as 46.67% of the panelists chose very much like it, 46.67% chose to like, and 6.67% chose less. It can be concluded that 93.33% of the panelists liked the aroma of instant spiced coffee. This is possible because the combination of aromas from the basic ingredients used, namely spice powder,

coffee, sugar, and creamer becomes a distinctive taste. Spices (ginger) that taste spicy are caused by the presence of chemical compounds in the form of gingerol [22] and cinnamon which tastes spicy and hot caused by the presence of chemical compounds in the form of cinnamic aldehyde, as well as the use of sugar, coffee, and creamer which can emphasize the taste or masking an unwelcome after-taste [25] to cover the spicy taste characteristic of spices.

The assessment did not like the taste of instant spiced coffee, due to the sharp spice taste and the panelists were still not used to coffee drinks that were added with spices, and also the coffee aroma was felt to be less strong [22]. In addition, ginger contains a non-volatile oil called oleoresin which is a component that gives ginger a distinctive spicy and bitter taste [24].

3.2.4. Viscosity

The viscosity of beverage products is a major concern in the processing of beverage products because it affects the processing and packaging of products and can affect customer acceptance of a product. The results of the panelists' assessment of the viscosity of "Instant Spice Coffee" are presented in the form of a pie chart in Figure 4. The results of the panelists' assessment of the viscosity criteria of instant spiced coffee were 16.67% of the panelists chose very much like it, 70% chose it like it, and 13.33% chose it less. It can be concluded that 86.67% of the panelists liked the consistency of the instant spiced coffee.

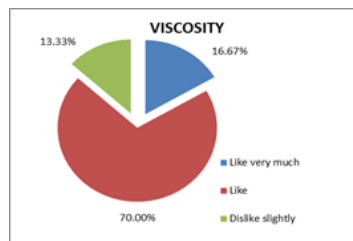


Figure 4. Hedonic Test Diagram of Viscosity

Panelists who do not like the thickness of instant spiced coffee stated that instant spiced coffee was too thick so it took too long to stir. It is known that mannan as the main component of polysaccharides is the main cause of the high viscosity of coffee extract [26]. Thickness varies between panelists, there are panelists who like strong coffee but there are also panelists who like thinner coffee.

3.2.5. Solubility

The results of the panelists' assessment of the solubility of "Instant Spice Coffee" are presented in the form of a pie chart in Figure 5.

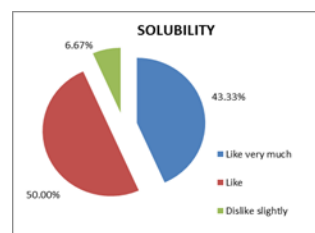


Figure 5. Hedonic Test of Solubility

The results of the panelists' assessment of the viscosity criteria of instant spiced coffee were 43.3% of the panelists chose very much like it, 50% chose like it, and 6.67% chose it less. It can be concluded that 93.33% of the

panelists liked the solubility of instant spiced coffee and only 6.67% did not like it. These results are consistent with the study [27] that the concentration of ginger powder less than 6% had no significant effect on the total dissolved solids content of steeped ginger coffee.

Panelists who did not like the solubility of instant spiced coffee stated that the texture of instant spiced coffee was coarse so that too much pulp was not dissolved.

3.3. Nutrient Contents

The analysis test of the nutritional content of "Instant Spiced Coffee" is carried out by doing a laboratory test for the product. Nutrient content of instant spiced coffee per 100 g: carbohydrates 44.80%, Fat 2.15%, Protein 1.38%, Energy 208.50 kcal, Vit A 42.50 mg, Vit C 38.10 mg, Antioxidants 198.20 mc, Ca 89.50 mg.

Based on the results of the laboratory tests above, can be concluded that the antioxidant content of instant spiced coffee products is very high, this is because there is a combination of the antioxidant content of several ingredients such as coffee and spices. Coffee can be useful as an antioxidant because of its high chlorogenic acid content [12] and spices such as ginger, kencur, lemongrass, have antioxidant power exceeding tocopherol [28]. Clove extract has great potential as a natural antioxidant with activity comparable to synthetic antioxidants. 29]. Coffee and spices contain phytochemical compounds that can be useful as antioxidants that are useful for protecting cells in the body and reducing damage to body tissues due to free radicals.

Other nutritional contents in spiced coffee products are carbohydrates, fat, energy, vitamins A and C, calcium in moderate amounts. Vitamins A and C are very useful for increasing endurance.

Instant spiced coffee drinks, when consumed once a day, can contribute to the fulfillment of the body's daily nutritional needs and can protect the body from free radicals, and can increase endurance and immunity, especially to prevent Covid-19.

3.4. Calculation of Selling Price

Determination of the selling price of instant spiced coffee products is carried out with total calculation, so the selling price of the product can be known in one recipe yields 72 servings/sachet weighing 30 g per sachet or per serving.

It can be seen from Table 1, that there are 5 main components of material costs, namely Gajah ginger, emprit ginger, galangal, sugar, and creamer. The total procurement of the 5 materials is Rp. 80,550 or 83% of the total material cost of Rp. 97,107. The total cost of the main ingredients shows that the material costs of these 5 ingredients will greatly affect the total cost of instant spiced coffee.

The calculation of the selling price of instant spiced coffee can be determined by using the components of raw material costs (food costs), overhead costs (OH), labor costs (LC), and determining the desired operating profit (profit). The calculation of the selling price of instant spiced coffee if the desired FC% is 60%, OH 10%, LC 10%, and profit is 20% then:

$$\begin{aligned}
 \text{Material/Food Cost} &= \text{Rp. } 97.107 \\
 \text{Selling Price (SP)} &= \text{FC (RP) / FC (\%)} \\
 &= \text{Rp. } 97.107 \times 100/60 \\
 &= 161.845 \text{ per recipe} \\
 \text{Gross Profit} &= (\text{SP} - \text{FC}) \\
 &= \text{Rp. } 161.845 - \text{Rp. } 97.107 \\
 &= \text{Rp. } 64.738 \\
 \text{Over Head} &= 10\% \times \text{Selling Price} \\
 &= 10\% \times \text{Rp. } 161.845 \\
 &= \text{Rp. } 16.185 \\
 \text{Labour Cost} &= 10\% \times \text{Selling Price} \\
 &= 10\% \times \text{Rp. } 161.845 \\
 &= \text{Rp. } 16.185 \\
 \text{Profit} &= 20\% \times \text{Selling Price} \\
 &= 20\% \times \text{Rp. } 161.845 \\
 &= \text{Rp. } 32.369 \\
 \text{Selling Price Per portion (sachet)} &= \text{Rp. } 161.845 : 72 \text{ portion} \\
 &= \text{Rp. } 2.248 \text{ per sachet (30 gram)}
 \end{aligned}$$

Thus it can be determined that the selling price of instant spiced coffee is Rp. 2.248,- or rounded up to Rp. 2.500,- per sachet (30 g).

4. CONCLUSION AND SUGGESTION

4.1. Conclusion

The panelist's level of color preference is 93.335 likes, the aroma is 93.33% likes, tastes is 93.33% likes, viscosity is 86.67%, and solubility is 93.33%. The nutritional content of "Instant Spiced Coffee" per 100 grams is as follows: Energy: 208.50 kcal, Carbohydrates 44.80%, Fat 2.15%, Calcium 89.50 mg, Protein 1.38%, Vitamin A 42.50 grams, Vitamin C 38.10 grams, and Antioxidants 198.20 mc. The selling price of the product "Instant Spiced Coffee" is Rp. 2.500,- (per sachet).

4.2. Suggestions

1. It is necessary to do a preference test on a wider range of panelists/consumers to determine consumer acceptance of instant spiced coffee products so that they can be produced commercially.
2. Instant spiced coffee drinks can be consumed once a day to meet the daily nutritional needs of the body and can increase endurance and immunity
3. Increasing the amount of production probably can make the price to be more competitive with another instant coffee products.
4. Further research can be done to determine the shelf life of instant spiced coffee.
5. Appearances can be improved by using attractive packaging and labeling materials

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