Original Article

Evaluation Of Characteristics Of Melting Power, Color, And Favorite Ice Cream Combination Of Kefir With Different Percentages Of Purple Sweet Potato (Ipomoea Batatas Var Ayumurasaki)

Zulfi Aryanti[1], Fatma Maruddin[2], Ratmawati Malaka[3]

[1]Graduate Student of Animal Husbandry Science and Technology, Faculty of Animal Husbandry, Hasanuddin University, Makassar, South Sulawesi, Indonesia.
[2]Department of Livestock Production, Faculty of Animal Husbandry, Hasanuddin University, Jalan Perintis Kemerdekaan Km. 10 Tamalanrea, Makassar 90245, South Sulawesi, Indonesia.
[3]Department of Livestock Production, Faculty of Animal Husbandry, Hasanuddin University, Jalan Perintis Kemerdekaan Km. 10 Tamalanrea, Makassar 90245, South Sulawesi, Indonesia
Email: fatma_maruddin@yahoo.co.id | zulfiaryantikallang@gmail.com
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Abstract

Aims: The study consisted of 2 factors, namely Factor A and Factor B. Factor A aimed to analyze the effect of adding the percentage of purple sweet potato flour stabilizer in the ice cream mixture to the characteristics of kefir ice cream. Factor B aims to analyze the effect of the combination of ice cream dough and kefir dough on the characteristics of kefir ice cream. This research was conducted at the Milk Processing Biotechnology Laboratory, Hasanuddin University, Makassar. **Methods:** The method used was an experimental method with a completely randomized design (CRD) factorial pattern of 5 × 5 treatments with 3 replications. This study used Factor A with the percentage of purple sweet potato in the ice cream mixture (0%, 0.5, 1%, 1.5%, and 2%) and Factor B with a comparison of the combination of ice cream and kefir mixture (100%: 0, 75%:25%, 50%:50%, 25%:75%, 0%:100%). **Results**: The results of the interaction of the two factors showed a significant effect ($p<0.01$) on kefir ice cream on the assessment of melting power, color, and preference. The best result was kefir ice cream combination 50 (ice cream dough): 50 (kefir dough) with the results of melting power (average 30-60 minutes), slightly purple color sensory (2.64), and panelists' preference level, namely likes (4.09).

Keywords: Ice Cream, Kefir, Purple Sweet Potato, Physical Characteristics, Melting Power, Color, Preferences

INTRODUCTION

Ice cream is a processed frozen food product that has a high nutritional content made through a combination of freezing and agitation processes in ingredients consisting of milk and dairy products, stabilizer sweeteners, emulsifiers, and flavors (Susilawati et al., 2014). Consumption of ice cream is currently increasing from time to time marked by the increasing variety and number of ice creams on the market (Sarofa et al., 2014). To produce quality ice cream and have a good texture, it is necessary to have a stabilizer or stabilizer in the ice cream mixture.

Stabilizers can stabilize fat globules and improve and maintain product quality (Agarwal & Prasad, 2013). The stabilizer can also reduce the amount of free water in the ice cream mixture and bind it as hydration water. This binding forms a gel structure and produces a smooth ice cream texture (Bahramparvar et al., 2011; Pangestu et al., 2019). Substitution of flours from tubers can be used as a source of stabilizer and can improve the texture of ice cream. One of the tuber-

derived flours that can be used as a stabilizer is purple sweet potato flour (Siswati et al., 2019). Sweet potato flour is used as a raw material in the food industry. Purple sweet potato contains anthocyanin pigments ranging from 51.50 mg/100 g to 174.70 mg/100 g (Kumalaningsih, 2006).

The main ingredient in making ice cream can use goat's milk. Goat's milk has almost the same nutritional content as cow's milk. However, goat's milk has a distinctive prengus aroma. This aroma is an important concern in the development of processed goat milk products.

The results of the pre-research show that the processing of goat milk into ice cream has not been able to remove the prengus aroma of goat milk. In this study, the combination of ice cream and kefir dough is expected to minimize and eliminate the prengus aroma. The typical aroma of kefir fermentation is expected to minimize the smell of prengus. Kefir is milk that is fermented by several microbes (bacteria and yeast) (Farnworth, 2005; Sulmiyati et al., 2019). Kefir has several beneficial benefits for the health of the body, including as a probiotic which can prevent the growth of pathogenic bacteria that enter the body, reduce the risk of cancer, lower cholesterol levels, reduce the risk of coronary heart disease, help form the immune system in the body (Hanum, 2016; Januario et al., 2018; Julianto et al., 2016).

In connection with the presence of purple sweet potato in the composition of ice cream, it is expected to improve the texture of ice cream after mixing ice cream and kefir. The content of inulin and raffinose can be a prebiotic for kefir microorganisms during storage. In addition, the anthocyanin content can be a natural dye and also increase the functional ability of the final product of probiotic ice cream. This study aims to observe the effect of adding different percentages of purple sweet potato and determine the effect of the combination of ice cream and kefir dough on the physical characteristics (melting power, color, and preference) of kefir ice cream.

Methodology

This research was conducted at the Milk Processing Biotechnology Laboratory, Faculty of Animal Husbandry, Hasanuddin University, Makassar. The equipment used in this study were analytical scales, measuring cups, stainless steel tablespoons, glass cups, stainless steel containers, cutting boards, napkins, saucepans with stems, gas stoves, autoclaves, refrigerators (refrigerators), freezers, thermometers, incubators, aluminum foil, alcohol, conical, spirit, bunsen, oven, micropipette, spatula, hand mixer, vortex mixer, label paper, plastic, organoleptic test paper (sour taste), spoon, ice cream cup, and others. The ingredients used are goat's milk (Gemari Farm®), full cream milk (Indomilk®), liquid sugar (Rose Brand®), egg yolks, water, whippy cream (Haan®), vegetable cream (Max Creamer®), sweet potato flour. purple sweet potato (Bionic Farm Organic®), and others.

This research was conducted experimentally using a completely randomized design (CRD) 5 × 5 factorial patterns with 3 replications, consisting of 2 factors.

Factor A (total percentage of purple sweet potato flour stabilizer in ice cream dough)

A1 = Purple Sweet Potato Flour 0%

A2 = Purple Sweet Potato Flour 0.5%

A3 = Purple Sweet Potato Flour 1%

A4 = Purple Sweet Potato Flour 1.5%

A5 = Purple Sweet Potato Flour 2%

Factor B (a combination of ice cream and kefir dough)

B1 = 100%: 0%

B2 = 75%: 25%

B3 = 50%: 50%

B4 = 25%: 75%

B5 = 0%: 100%

Kefir Making Process

The goat's milk was sterilized at 105oC for 5 minutes and then the sterile goat's milk was cooled until it reached a temperature of ±37oC. 37o C for 24 hours. Furthermore, kefir was then added with sugar at a concentration of 15% (v/v) and homogenized (modified from the method of Sulmiyati et al. 2018b and Wulandari et al., 2017). The next stage of kefir is ready to be combined with the ice cream mixture.

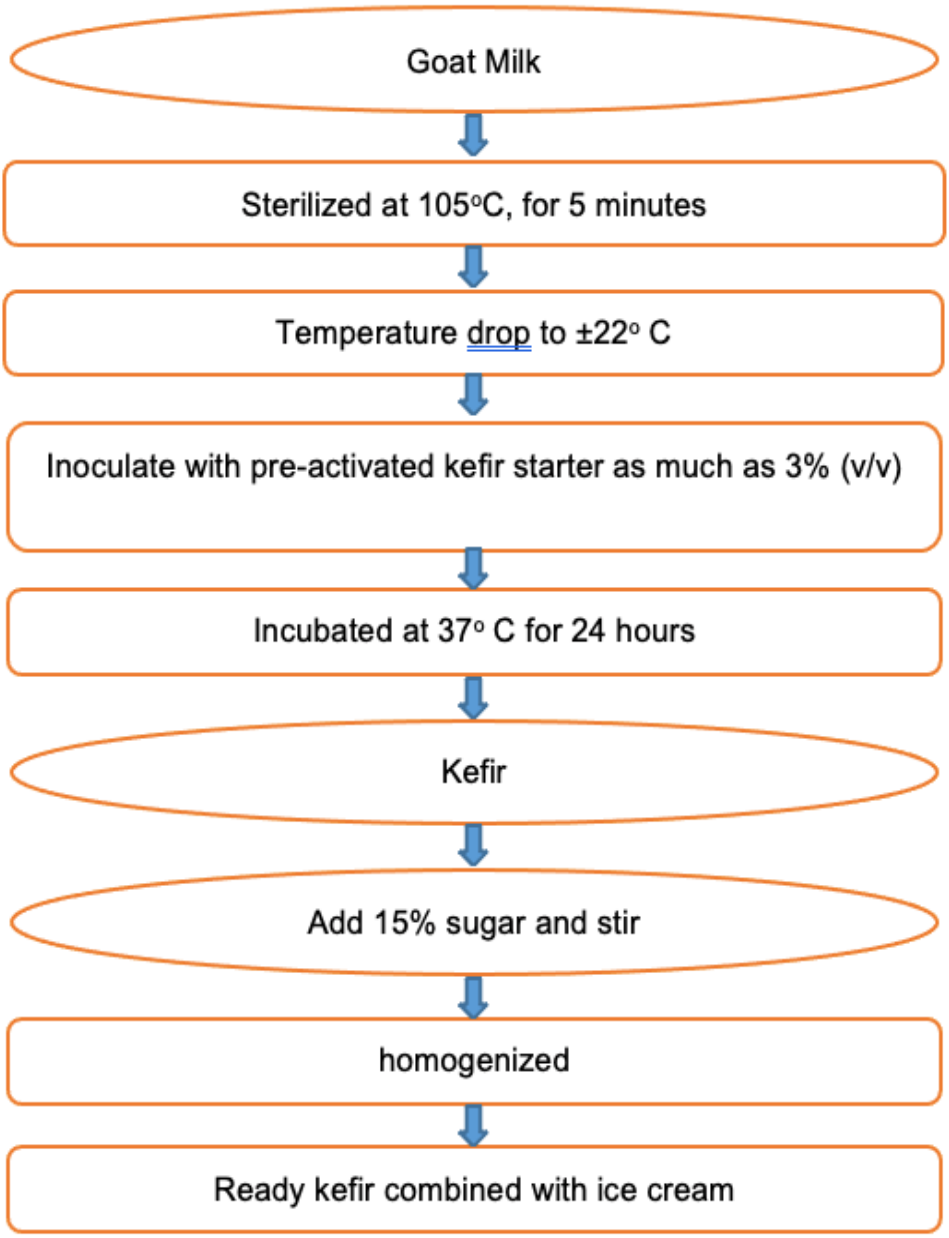


Figure 1. Kefir Making Flowchart

Kefir Ice Cream-Making Process

The making of ice cream in this study was made with a percentage composition of 8.5% (w/v) whippy cream, 12% (w/v) vegetable cream, 8% (w/v) sugar, 1.5% (w/v) egg yolks. v), goat's milk 60% (w/v) and estimated with 10% total solids in goat's milk. The addition of stabilizer in the form of purple sweet potato flour which is the treatment used respectively 0%, 0.5%, 1%, 1.5%, and 2% (w/v) of the total volume of ice cream to be made. The percentage of ingredients in the manufacture of goat's milk kefir ice cream is combined using the percentage of purple sweet potato.

The dough ingredients were mixed and pasteurized by LTLT at 72oC for 15 minutes. Furthermore, the mixture is cooled at 27oC then the ice cream mixture A1, A2, A3, A4, and A5 is combined with kefir (which was made before) in the ratio: (100% : 0%); (75%: 25%); (50%: 50%); (25%: 75%); and (0%: 100%); then aged at ± -10o C for 4-5 hours until half frozen.

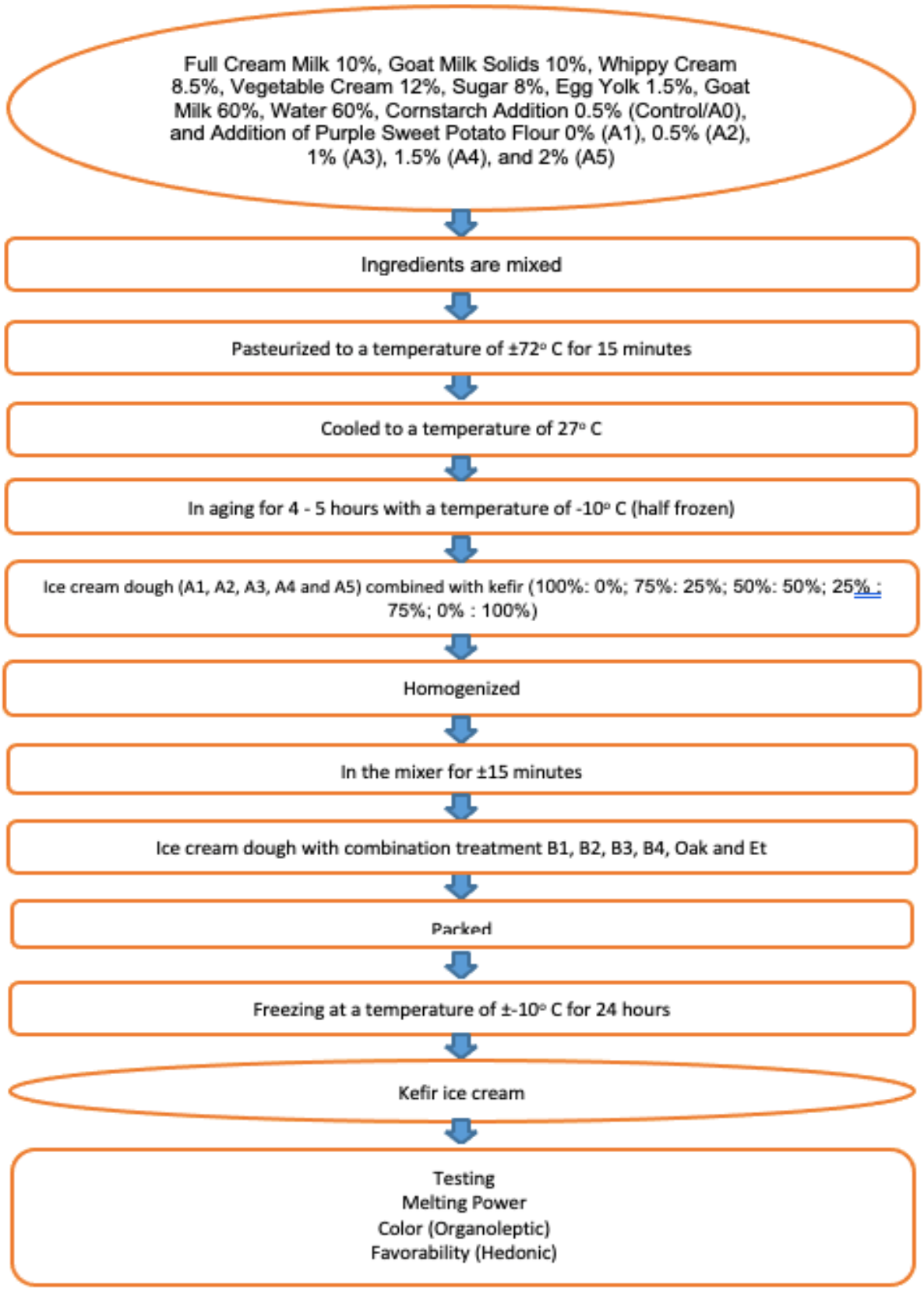


Figure 2. Kefir Ice Cream Making Flow Chart

Measured Parameters

Parameters observed in this study include testing the physical properties. Physical tests included melting power, color, and preferences for the characteristics of kefir ice cream.

Melting Power Testing

Melting power is the time needed for ice cream to melt completely (Syafarini, 2009). The melting power of ice cream is influenced by several factors including the amount of air trapped in the ice cream, the presence of ice crystals, and the formation of tissue by fat globules during freezing (Musee & Hartel, 2004). The ice cream melting test was carried out using the modified Malaka method (2014), namely packaged ice cream and 50 ml packs of ice cream which had been frozen at -10oC for 24 hours, then removed at room temperature, and the melted liquid was measured every interval. 10 minutes until all the ice cream has melted.

Organoleptic Testing and Hedonic Testing (Favorability)

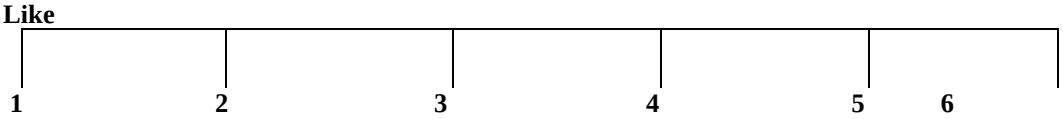
An organoleptic test is a test carried out using the panelist sensory method of a product to find out the quality that is owned by the product, as well as know consumer acceptance of the product (Ayustaningwarno, 2014). Organoleptic testing and preference testing in research will be carried out using a structured scale, related to consumer/panelist acceptance of the product produced (Harwanti et al., 2012). The number of panelists in this study was 25 people in the semi-trained category (Acmad et al., 2012). Semi-trained panelists are panelists who have been given an explanation to recognize certain characteristics, selected from a limited circle, and the test data is processed first so that very distorted data is not used (Setyaningsih et al., 2010).

The assessment criteria tested were color and preferences. In the preference test, priority was given to panelists who like ice cream and goat's milk. The preference test panel uses various age groups aged 12-45 years and does not care about gender (Achmad et al, 2012). Indicators of color and preference (hedonic) assessment are shown as follows:

Colour

Information:
(1) Not purple, (2) Slightly purple, (3) Slightly purple, (4) Purple, (5) Very purple, (6) Very, very purple

Like



Information:

(1) Dislike, (2) Few likes, (3) Somewhat likes, (4) Likes, (5) Very likes, (6) Very very likes

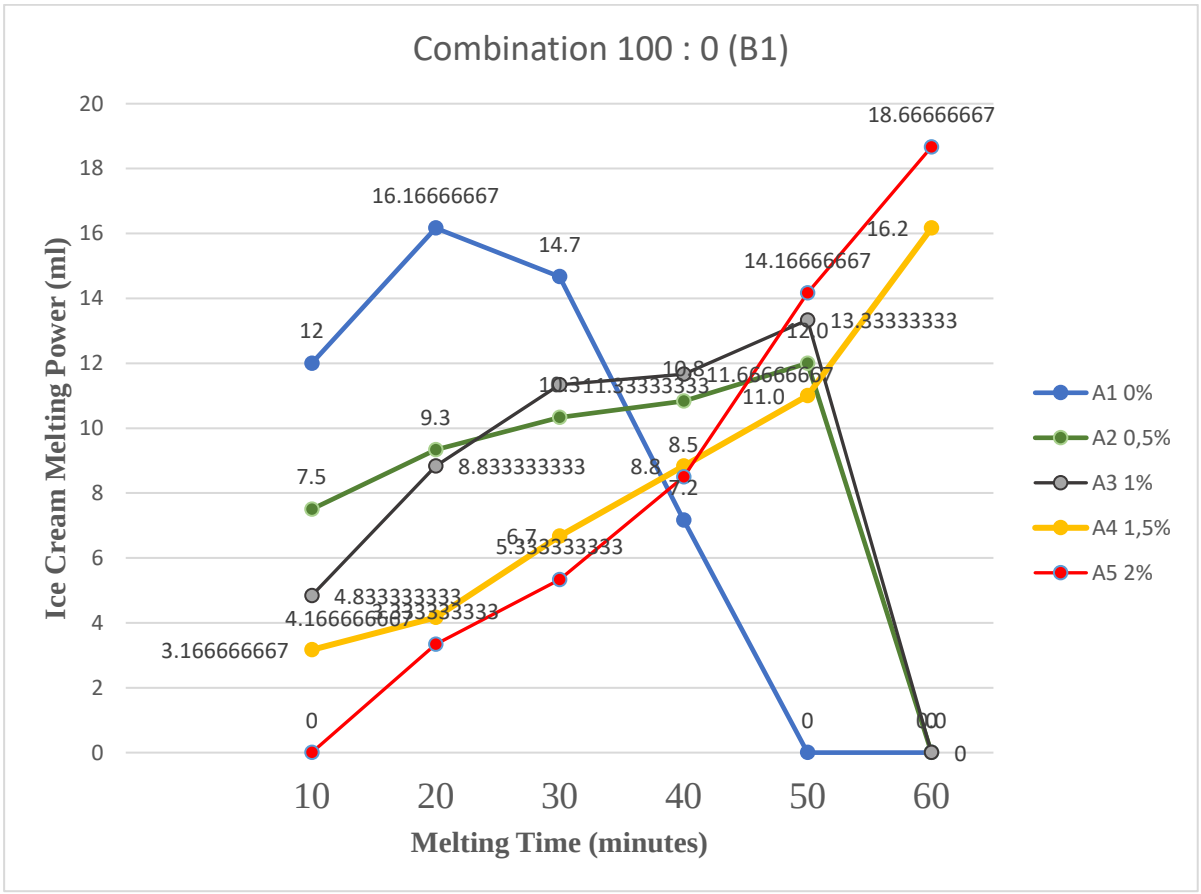
Data Analysis

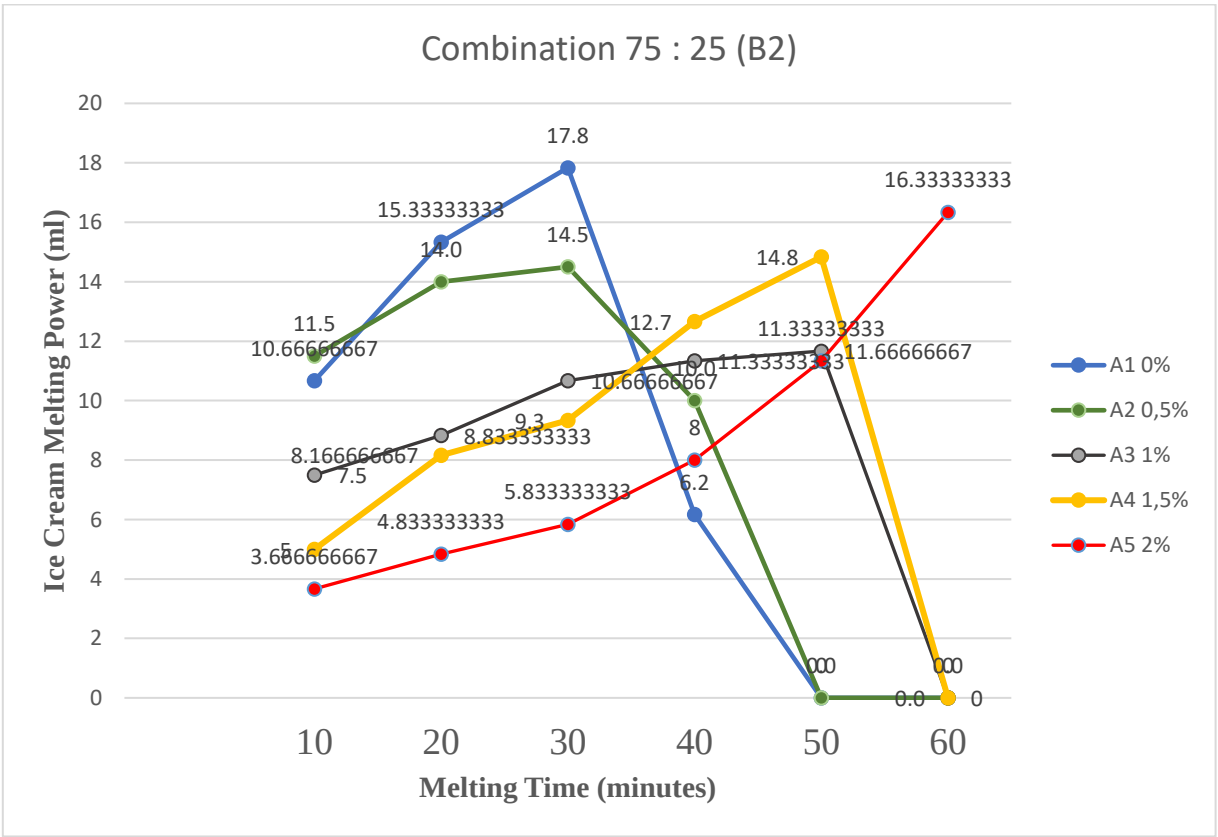
The data obtained were analyzed using analysis of variance according to a completely randomized design (CRD) factorial pattern (5 × 5) with 3 replications using the SPSS program (Hanafiah, 2005). Treatments that had a significant effect were further tested using Duncan's test.

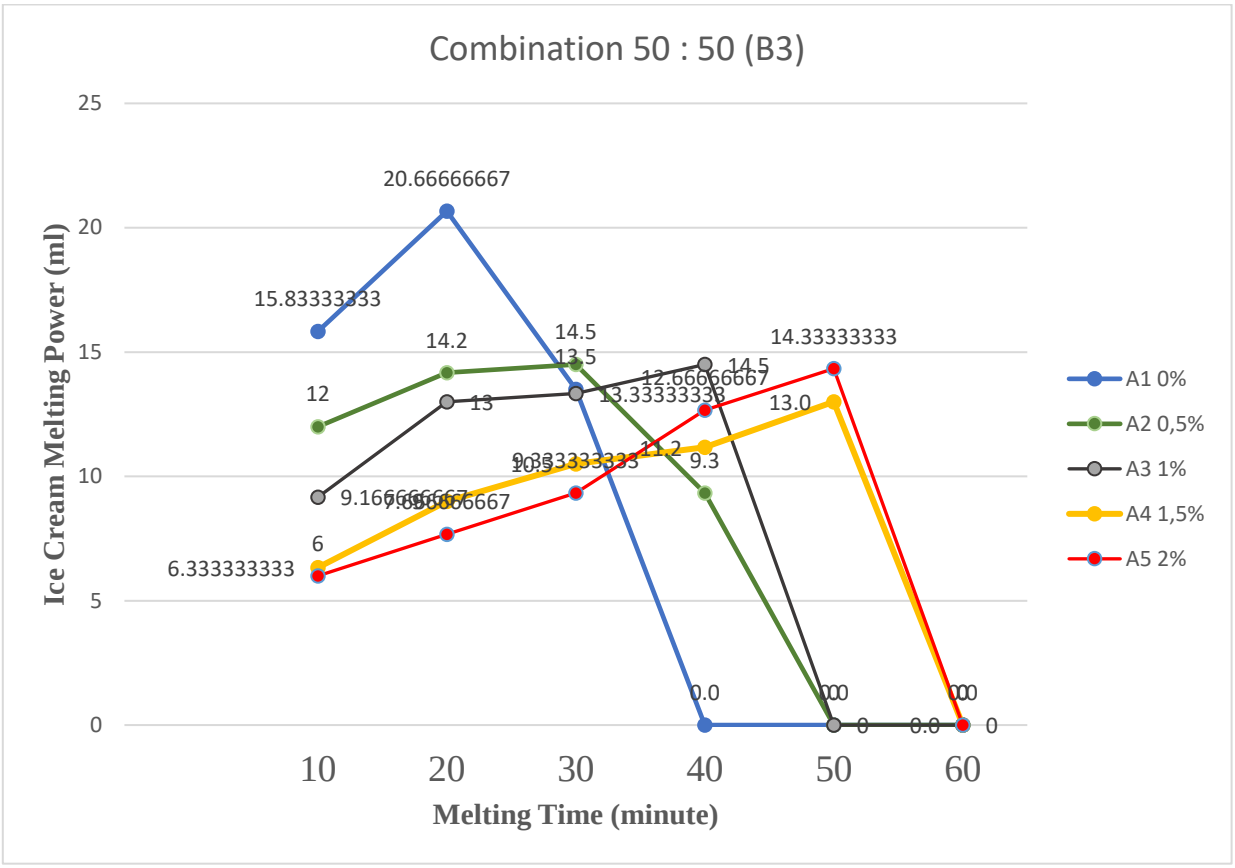
Results

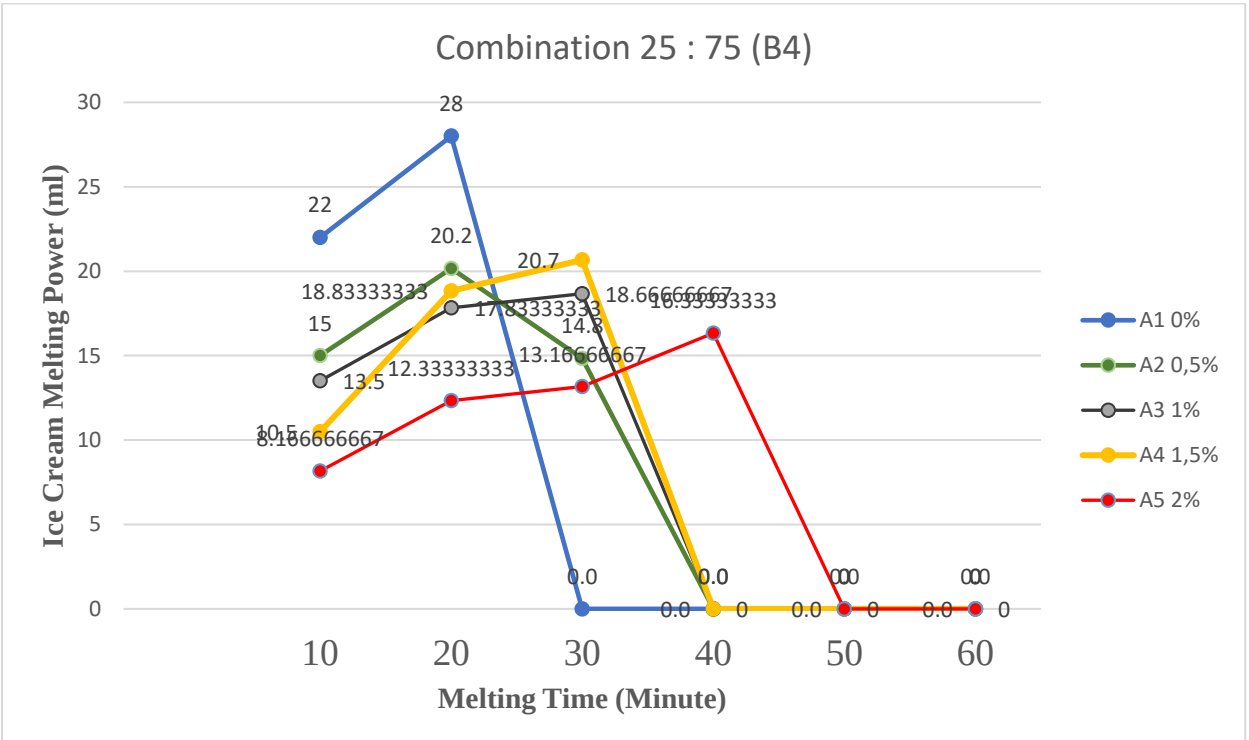
Melting Power of Kefir Ice Cream

Melting power is the time needed for ice cream to completely melt at room temperature after going through the freezing process. Ice cream is expected not to melt quickly at room temperature but to melt quickly at body temperature (Haryanti & Zuni, 2015; Widya et al., 2019). The melting speed of ice cream is one of the parameters used to see the quality of ice cream (Khasanah et al., 2020). The results of the research on the average melting power (minutes) of ice cream with the addition of purple sweet potato and different dough combinations can be seen in Figure 3.


Combination 100 : 0 (B1)
Ice Cream Melting Power (ml)
Melting Time (minutes)
A1 0%
A2 0,5%
A3 1%
A4 1,5%
A5 2%


Combination 75 : 25 (B2)
Ice Cream Melting Power (ml)
Melting Time (minutes)
A1 0%
A2 0,5%
A3 1%
A4 1,5%
A5 2%


Combination 50 : 50 (B3)
Ice Cream Melting Power (ml)
Melting Time (minute)
A1 0%
A2 0,5%
A3 1%
A4 1,5%
A5 2%


Combination 25 : 75 (B4)
Ice Cream Melting Power (ml)
Melting Time (Minute)
A1 0%
A2 0,5%
A3 1%
A4 1,5%
A5 2%

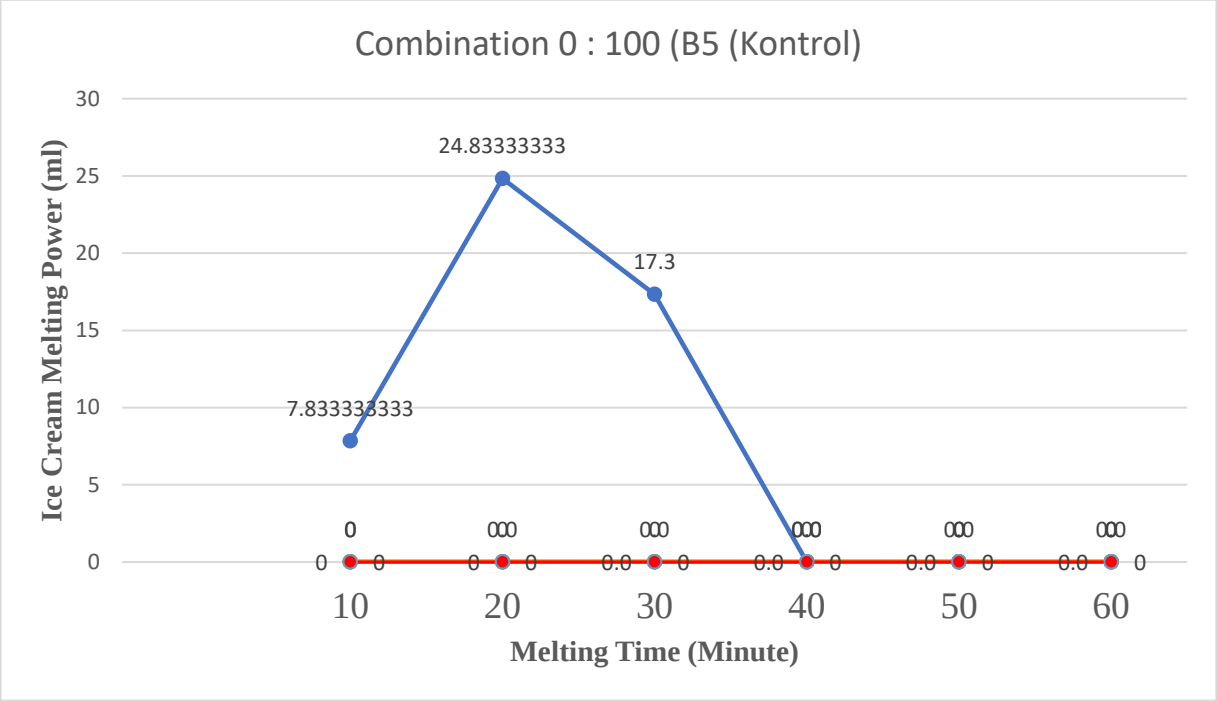


Figure 3. Average Melting Power (ml) of Kefir Ice Cream with Mixed Mixture of Addition of Purple Sweet Potato Percentage at Different Intervals of 10 Minutes

The melting power of kefir ice cream (Figure 3) shows that the higher the percentage of purple sweet potato added to the ice cream processing, the longer the melting power of the ice cream. The melting power of ice cream is measured in a tenth of a minute until the ice cream is completely melted. Figure 7 shows that the melting power of ice cream will be longer if you use more purple sweet potato flour. The application of purple sweet potato flour is in the manufacture of ice cream dough. In the picture the combination 100 : 0 (B1) shows the longest melting power of ice cream using purple sweet potato flour 1.5 - 2%, namely 60 minutes. However, the melting power will decrease in the combination that uses more kefir dough in the picture combination 25:75 (B4) shows the longest melting power using 2% purple sweet potato flour, which is 40 minutes. The fastest melting power of ice cream was ice cream without the addition of purple sweet potato, namely in the 25:75 (B4) combination, which was 20 minutes.

This shows that ice cream treated with the addition of purple sweet potato made a significant contribution to the melting power of kefir ice cream. This is due to the presence of carbohydrates (starch) and protein in purple sweet potatoes. Carbohydrates (starch) and protein can bind water well, and can further thicken the dough so that it can slow down the melting speed of ice cream.

Carbohydrates and protein in purple sweet potato act as a stabilizer. Melting power is affected by the amount of stabilizer (Hubeis et al., 1996). Maria et.al. (2014) stated that the higher the use of stabilizers in the manufacture of processed products, the more water will be bound. Furthermore, Goff & Hartel (2013) stated that the addition of carbohydrates in ice cream processing can play a role in water absorption, the ability to thicken the dough, and further increase the viscosity of the dough. According to Jumiati et al., (2015) that the use of purple sweet potato in ice cream products can increase the viscosity of the dough. Viscosity will affect the melting power of ice cream. The higher addition of a percentage of purple sweet potato in the ice cream mixture resulted in the ice cream melting longer, this was due to the ability to bind water to the purple sweet potato. The higher the water molecules trapped in the gel structure results in an increase in the viscosity of the ice cream dough and a longer melting power (Sherington, 1992).

The use of more ice cream dough in the 100:0 combination treatment (B1) resulted in a longer melting power of ice cream, namely 50 - 60 minutes for ice cream using purple sweet potato flour. Meanwhile, ice cream that does not use purple sweet potato flour is 40 minutes. If the use of more kefir mixture in the 25:75 (B4) combination treatment resulted in a shorter melting power of ice cream, namely 30 - 40 minutes for ice cream using purple sweet potato flour. Meanwhile, ice cream that does not use purple sweet potato flour only takes 20 minutes.

This is because the total solids of the ice cream mixture are higher than the kefir mixture. These differences resulted in differences in total water in different combination treatments (B1, B2, B3, and B4). The combination treatment of 100:0 (B1) with lower total water resulted in a longer melting power of ice cream. However, at the end of the observation, the rupture of the air-containing foam causes the bonds between the molecules to be released, so that a melting condition

appears. In general, the use of purple sweet potato in ice cream processing can be the key to improving the melting power of ice cream. According to Buckle et. al., (2007) one of the properties of the stabilizer is that it has a high water-holding capacity, useful for slowing down the melting of ice cream. This can be seen from the decrease in the melting power of ice cream products from the standard melting time. The ability to melt ice cream in this study was 30 - 60 minutes. This condition is following the requirements according to SNI No. 01-3713 1995 and Akesowon (2008), that a good melting range for ice cream is 15 - 25 minutes.

Kefir Ice Cream Color

Color is one of the determinants of consumer acceptance of a product. A product will be more attractive if it has a color that is liked by consumers. In the manufacture of food, several factors can influence it, among others, taste, texture, and color. Food color is one of the consumer assessments apart from the texture and nutrition of a food ingredient Winarno (1995). The results of consumer organoleptic assessment of the color of kefir ice cream, the treatment of the combination of ice cream dough with kefir, and the addition of purple sweet potato can be seen in Table 1.

Table 1. Average Color Value of Kefir Ice Cream with Mixed Dough (Ice Cream and Kefir) Treatment and Addition of Purple Sweet Potato Flour

Kefir Ice Cream Color						
Purple Sweet Potato Flour in Ice Cream Dough (%)	**Ice Cream Dough Combination: Kefir Dough**					**(B5) Control**
	100: 0 (B1)	**75.: 25 (B2)**	**50: 50 (B3)**	**25: 75 (B4)**	**Average**	
0 (A1)	1,02 ± 0,03[a]	1,02 ± 0,03[a]	1,02 ± 0,03[a]	1,02 ± 0,03[a]	1,02 ± 0,03[a]	
0,5(A2)	2,55 ± 0,05[c]	2,48 ± 0,08[c]	1,58 ± 0,08[b]	1,53 ± 0,18[b]	2,03 ± 0,10[b]	
1(A3)	3,50 ± 0,05[d]	3,43 ± 0,13[d]	2,55 ± 0,05[c]	2,47 ± 0,10[c]	2,99 ± 0,08[c]	1,02 ± 0,03
1,5(A4)	4,48 ± 0,13[e]	4,38 ± 0,19[e]	3,52 ± 0,15[d]	3,47 ± 0,03[d]	3,96 ± 0,12[d]	
2(A5)	5,55 ± 0,10[f]	5,48 ± 0,13[f]	4,52 ± 0,08[e]	3,50 ± 0,05[d]	4,76 ± 0,09[e]	
Total	3,42 ± 0,07[c]	3,36 ± 0,11[c]	2,64 ± 0,08[b]	2,40 ± 0,08[a]	2,95 ± 0,08	1,02 ± 0,03

Description: Different superscripts on the same row and column show a very noticeable difference (P<0.01). Ek=kefir that is processed like ice cream.

(1) Not purple, (2) Slightly purple, (3) Slightly purple. (4) Purple, (5) Very purple, (6) Very, very purple

The results of the color assessment of kefir ice cream (Table 1) show that the consumer's assessment of color with the addition of purple sweet potato and the combination of ice cream dough with kefir is about 1.02 - 5.55 (not purple - very, very purple). This shows that the purple color of kefir ice cream increases with increasing the percentage of purple sweet potato in the ice cream mixture and decreases when the amount of ice cream mixture is less in combination with kefir.

Analysis of variance showed that the treatment of adding the percentage of purple sweet potato flour, the treatment of the combination of ice cream mixture and kefir, and the interaction between the two treatments (addition of purple sweet potato and the combination of ice cream mixture with kefir) had a significant effect ($p < 0.01$) on the assessment panelists on the color of kefir ice cream.

The results of Duncan's further test showed that the interaction between the two treatments (addition of purple sweet potato and the combination of ice cream with kefir) showed that there was a significant difference ($P<0.01$) in the panelist's assessment of the purplish color of kefir ice cream. The combination of ice cream mixture with kefir mixture at 25:75 experienced a difference in the purplish color assessment with the treatments at 100:0, 75:25, and 50:50. The higher the increase in the percentage of kefir in the treatment combination caused the panelist's assessment of the purple color of kefir ice cream to decrease. The purple color of kefir ice cream comes from the anthocyanin content present in purple sweet potatoes and is used in the ice cream dough. In addition, the consumer's color assessment of ice cream without the addition of kefir (100:0 combination) compared to ice cream with the addition of 1.5-2% purple sweet potato flour tended to increase the purple color. Ice cream without the addition of purple sweet potato has a white color. This white color comes from beta-carotene in protein-covered fat. While the color of ice cream using purple sweet potato is purple. This is because the use of 1.5-2% purple sweet potato flour causes the anthocyanin content to give the purple color increase in kefir ice cream. This condition is in line with the research of Susilawati et al (2014) which stated that the color of goat's milk ice cream was affected by the level of addition of the percentage of purple sweet potato. Regarding the content of purple sweet potato as a purple colorant, according to Citramukti (2008) anthocyanin is a dye that gives a purple color which has the potential to become a natural dye for confectionery and can be used as

an alternative to synthetic dyes which are safer for health (Citramukti, 2008; Samber et al., 2013; Fahrullah et al., 2021). Anthocyanin natural color pigments will be attractive to panelists and will increase panelist acceptance of color (Deman, 2013). Furthermore Husna et al. (2013) suggested that dark purple sweet potato contains 61.85 mg/100 g of anthocyanins. Anthocyanin is one of the important parts of the pigment group after chlorophyll. Anthocyanins are water soluble, producing a purple color, and are widely distributed in sweet potatoes, leaves, and flowers.

Kefir Ice Cream Favorites

Likeability is a parameter that is measured by the panelist's level of preference for a product. This level of preference is called the hedonic scale. This test will determine whether a product is commercially viable or not depending on the panelists' preference for the product. Consumer assessment of the preferences of kefir ice cream with the combination of dough (ice cream and kefir) and the addition of purple sweet potato can be seen in Figure Table 2.

Table 2 Average Liked Value of Kefir Ice Cream with Mixed Dough (Ice Cream and Kefir) Treatment and Addition of Purple Sweet Potato Flour

Kefir Ice Cream Favorites						
Purple Sweet Potato Flour in Ice Cream Dough (%)	Ice Cream Dough Combination: Kefir Dough					Control (Ek)
	100 : 0 (B1)	75. : 25 (B2)	50: 50 (B3)	25: 75 (B4)	Average	
0 (A1)	5,42 ± 0,03^{d}	5,40 ± 0,05^{d}	4,50 ± 0,18^{c}	3,53 ± 0,08^{b}	4,71 ± 0,08^{d}	
0,5(A2)	5,47 ± 0,06^{d}	4,50 ± 0,09^{c}	4,47 ± 0,10^{c}	3,48 ± 0,06^{b}	4,48 ± 0,08^{c}	
1(A3)	5,48 ± 0,08^{d}	4,50 ± 0,15^{c}	4,45 ± 0,13^{c}	3,40 ± 0,13^{b}	4,46 ± 0,12^{c}	1,50 ± 0,09
1,5(A4)	5,55 ± 0,05^{d}	4,45 ± 0,13^{c}	3,53 ± 0,08^{b}	2,53 ± 0,16^{a}	4,01 ± 0,10^{b}	
2(A5)	5,58 ± 0,10^{d}	3,53 ± 0,08^{b}	3,48 ± 0,06^{b}	2,50 ± 0,09^{a}	3,77 ± 0,10^{a}	
Total	5,50 ± 0,06^{d}	4,48 ± 0,10^{c}	4,09 ± 0,11^{b}	3,09 ± 0,10^{a}	4,29 ± 0,10	1,50 ± 0,09

Description: Different superscripts on the same row and column show a very noticeable difference (P<0.01). Ek=kefir that is processed like ice cream. Et=Ice cream with formula (stabilizer)

(1) Dislike, (2) Slightly Like, (3) Somewhat like, (4) Like, (5) Very like, (6) Very very like.

Consumer preference for kefir ice cream with the addition of purple sweet potato and the combination of ice cream dough with kefir is about 2.50 - 5.58. Analysis of variance showed that the treatment of adding the percentage of purple sweet potato flour, the treatment of the combination of ice cream mixture and kefir, and the interaction between the two treatments (addition of purple sweet potato and the combination of ice cream mixture with kefir) had a significant effect ($p < 0.01$) on the assessment panelists on kefir ice cream preferences.

The results of Duncan's further test showed that the interaction between the two treatments (addition of purple sweet potato and the combination of ice cream with kefir) showed that there was a significant difference ($P<0.01$) in the assessment of consumers' preference for kefir ice cream. Mixture treatment at 25:75 showed differences in consumer preference ratings with the combination treatment at 100:0, 75:25, and 50:50. The higher increase in the percentage of kefir in the treatment combination caused the consumer's preference for kefir ice cream to decrease. The decrease in preference was due to an increase in the sour taste of kefir ice cream by increasing the use of kefir dough in the combined treatment with ice cream dough. Likewise, the aroma of fermented kefir also increased along with the increase in the use of kefir mixture in the combination treatment with ice cream mixture. Lanusu et al. (2017) suggested that taste greatly influences consumer preferences. Taste can be said to be the main determining factor. The taste of ice cream is also influenced by several things such as the right sweet and sour taste and structural changes that can change the taste of ice cream.

Furthermore, Table 2 also shows that kefir ice cream with the treatment of using purple sweet potato flour between 1.5 -2% with the combination treatment decreased consumer preference. This is because the use of 1.5-2% purple sweet potato flour results in changes in texture and aroma. Viscosity changes can trap volatile aromatic compounds well. Good viscosity can retain water and can further trap volatile volatile compounds and oxygen molecules well. These conditions can affect the characteristics of kefir ice cream. Carbohydrate and protein content in sweet potato flour will bind water well in the dough. This condition causes the binding of water to be better when using 1.5-2% of sweet potato flour in the ice cream mixture so that the trapping of volatile compounds and oxygen is also getting better. Syafutri & Lidiasari (2012) suggested that a thicker dough indicates that more water is bound so that the speed of the ice cream to melt becomes slower and the time needed to melt the ice cream becomes longer. Furthermore, Susilawati et al. (2014); Hartel (2013) suggested that high carbohydrates and protein in ice cream processing can play a role in water absorption and the ability to thicken the dough. The thicker a material will limit the mobility of water molecules due to the narrow space between particles.

Ice cream with treatment without the addition of kefir is the most preferred treatment option. However, product development with a combination of kefir will result in product changes with different typical conditions. Change implies that the product will likely be preferred or vice versa, it will reduce consumer preferences. Therefore, product development generally requires a consumption habituation stage so that the product can be well received by consumers. Kartika et al. (1998) stated that the preference test is a panelist test expressing their response in the form of whether they like or not the properties of the material being tested. The implication results in a difference in the panelist's preference assessment. Masykuri (2012) suggests that the distinctive taste of an additional ingredient that fits into ice cream can give it a distinctive taste. The taste of ice cream is a combination of taste and aroma. The quality and good taste of ice cream are influenced by stabilizers, sugar, and other ingredients. This is also supported by the opinion of Laksmi (2012) who states that the factors that can affect the preference for a product are smell, taste, color, and mouth stimulation.

Conclusion

Based on the results of the research that has been carried out, it can be concluded that the combination of ice cream and kefir mixture shows a significant effect and there is an interaction with kefir ice cream on melting power, color, and the panelist's rating level. Ice cream combination 50 (ice cream dough): 50 (kefir dough) with the addition of purple sweet potato flour produces the best ice cream and can provide and improve functional properties in the final product of kefir ice cream.

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Author Contributions

Z.A., F.M., and R.M. designed the experiment; Z.A. provides materials, conducts experiments, and analyzes data; Z.A. and F.M. compiled the article.

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