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The Combination Ratio of Jackfruit (*Artocarpus heterophyllus*) Rind And Breadfruit (*Artocarpus altilis*) and Different Boiling Time to Increase Chemicals and Organoleptic Quality of Meatless Floss

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ABSTRACT

Meat floss is usually made from animal meat. However, recently meatless floss made from vegetables of fruit rinds is gaining popularity. The use of breadfruit is less than optimum, thus processing it to be meatless fruit can increase its value. On the other hand, jackfruit rind has unique characteristics which make it suitable to be processed into meatless floss. This research employed the Completely Randomised Factorial Design treatment. The first factor was two boiling times, namely 8 minutes and 10 minutes. The second factor was the combination ratio of jackfruit rind and breadfruit, namely 25% : 75%; 50 : 50 %; and 75% : 25%. Each treatment was repeated three times. The result indicated that boiling time has a significant influence on the chemical quality of meatless floss, including water and rind content. On the other hand, the ratio of jackfruit rind and breadfruit has significantly affect ash and fat content. Meanwhile, the combination of boiling time and ratio of jackfruit rind and breadfruit significantly affect ash content. The result if Wallis Kruskal test for the organoleptic quality of meatless floss revealed that the boiling time and ratio of jackfruit rind and breadfruit significantly affect colour and crunch, and did not affect flavour and aroma. The L2P2 treatment code, namely 10 minutes boiling time and the ratio 50 %: 50% ratio of jackfruit rind and breadfruit, was the best treatment in this study. This treatment obtained the highest score of 0,68, with water 4,992% content; 6,81% rind content, 5,5 in flavour; 11,563% fat content; 4,9 in colour; 5,1 in aroma; 5,6 in crunch; and 7,937% ash content.

Keywords: *meatless floss; jackfruit; breadfruit; rind; boiling time.*

INTRODUCTION

As a tropical country, Indonesia has many types of tropical fruit, including breadfruit (*Artocarpus altilis* F.). Breadfruit production is increasing rapidly, from 35.435 tonnes per year in 2000 to 92.014 tonnes in 2007, with harvest area of 13.359 ha (Widowati, 2016). Indonesians use breadfruit mostly for cake flour, snacks, and crackers. Breadfruit is typically sold in traditional market cooked, either steamed or fermented (Dara & Arlinda, 2017).

Another type of fruits commonly found in Indonesia is jackfruit (*Artocarpus heterophyllus*). Jackfruit tree can be found in Java, Sumatera, and Kalimantan Islands (Dahlan, 2019). Jackfruit is a very potential product because it can be used for various food products. However, usually, only the bulb of the jackfruit is used, and the rind is discarded and considered as waste and pollutant. The percentage of jackfruit rind in an entire jackfruit is 18,9%, thus indicating the abundance of jackfruit rind, namely 2.550 ton/ha. Jackfruit rind dominates the waste of jackfruit processing, which is 40-50% of the total by-product. In Indonesia, jackfruit is mostly used for animal fruit, a small number is processed into jam, jelly, or mixed into jackfruit yoghurt (Winarsih & Sopandi, 2014), mango (*Mangifera indica* L) roll-up (Yusmita & Wijayanti, 2018), and bioethanol (Putri, 2018). Meanwhile. Jackfruit rind contains a high level of water, carbohydrate, vitamin C, protein, pectin and fibre, namely 1,94%, making it suitable to be processed as an ingredient in meatless floss.

Generally, floss is made out of various animal meat (Arlin Besari Djauhari, 2017), even though it can be made out of fruits or vegetables which has fibrous texture (Tirza Jeli Ping, Rolan Rusli, 2016). Fibre is present in various ingredients, not only in animal. One of

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the most fibrous fruits and vegetables are jackfruit and breadfruit. Breadfruit is fundamentally fibrous, while fibrous material is found in young jackfruit and jackfruit rind. The essential process in making floss is boiling, which is aimed to make ingredients tender and fibrous. However, the boiling jackfruit rind has an added value, namely to eliminate sap that is commonly found in jackfruit (Fadzilla, 2018).

Blanching or pasteurisation treatment can be done in less than 100 degree Celsius for a few minutes using hot water or steam (Fatimah, Djauhari, & Hariyani, 2019). The blanching process is included in the thermal process, which requires a 75 – 95 degree Celsius for ten minutes. The primary purpose of blanching is to activate various enzymes such as peroxidase and catalase, even though it also kills some of the microbes in the ingredients. These two enzymes are the most resistant to heat (Hadi, 2017)

According Candra & Tunoq, (2018) researched the making of floss using a combination of snakehead fish and banana blossoms treated with boiling for 5-10 minutes until wilted. Based on that finding, the boiling in the current research was done for 8 minutes and 10 minutes.

METHODS

The main ingredients used in this research were jackfruit rind, and breadfruit obtained from Perkebunan Jackfruit and Breadfruit harvested in Dukun Sub-District. Other ingredients were shallot, garlic, ginger, turmeric, galangal, candlenut, chillies, lemongrass, bay leaf, kaffir lime leaves, coriander, coconut milk, and Javanese brown sugar. All ingredients were obtained from Jackfruit and Breadfruit plantation in Dukun Subdistrict. Substances used for chemistry analysis including concentrated H_2SO_4, Kjeldahl tablets, borate acid 4% (containing methyl red and brome cresol green indicators), HCl Titrisol 0,2 N, and petroleum benzene.

This research Completely Randomised Factorial Design treatment which included two factors, each of which has two to three levels. The first factor was boiling time (L) containing two levels, namely 8 minutes and 10 minutes. The second factor was the two combinations of Jackfruit rind and Breadfruit ratios (P) containing three levels, namely P1: 25 % Jackfruit rind: 75 % Breadfruit; P2: 50 % Jackfruit rind: 50 % Breadfruit; and P3: 75 % Jackfruit rind: 25 % breadfruit.

The Variables studied in this research were determining ash content with using Gravimetry method (Noviyanty, Hepiyansori, & Dewi, 2020); fat content with Soxhlet method modified with Tecator-Foss using Semi-Automatic Sostec System Tecator HT-2 equipment (Andarwulan, N., Kusnandar, F., & Herawati, 2011); water content with Gravimetry methods (Rizki Amelia, Maksi Ginting, 2015); rind toughness level using gravimetry method (AOAC,2012)I and test organoleptic test in the form of test hedonic test including flavour, texture, aroma and appearance. As much as 25 panellist were involved to assess the organoleptic factors using 7 preference levels, namely 1 = highly not preferable, 2 = not preferable, 3 = somewhat not preferable, 4 = neutral, 5 = somewhat preferable, 6 = preferable and 7 = highly preferable (Dara & Arlinda, 2017).

Parametric data obtained in this research were protein content, water content, ash content and rind toughness level analysed based on parametric statistics using Variance Analysis (ANOVA) in *Statistic Product and Service Solution (SPSS)* version 25. In the case the analysis results exhibit a significant difference between treatments ($p < 0,05$), then further tests would be conducted using BNT/BNJ/Duncan α =5% level of confidence, depending on the value of Correlation Coefficient (CC). CC value under 5 % would be tested with BNT test, CC level 5 – 10 % would be tested with BNJ, and CC level above 10 % would

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be tested with Duncan test (Sutandi, 2018). Organoleptic data was analysed based on the mean of preference level and Kruskal Wallis test to determine whether there are differences in the treatment results. To determine the best treatment based on all parameter, researchers used the Effectivity Test (Latifah, 2008).

RESULT AND DISCUSSION

Results of parametric data test analysis on boiling time and a combination ratio of jackfruit rind and breadfruit towards chemistry and organoleptic quality of meatless floss revealed that the interaction of boiling time and combination ratio significantly affect fat content, water content, and an ash content of meatless floss. The significance of chemistry test parameter is presented in Table 1.

Table 1. Significance parameter of chemistry test on meatless floss

No	Parameter Test	Boiling time (L)	Treatment Combination ratio (P)	L*P	Criteria Highest/ Lowest	Treatment(*)	Value
1	Water content	S	NS	NS	Lowest	-	-
2	Ash content	HS	HS	S	Highest	L2P3	8,1013
3	Fat content	NS	HS	NS	Lowest	LP1	12,9302
4	Rind level	S	NS	NS	Highest	-	-

Note: HS = *Highly Significant*, S = *Significant*, NS = *Non Significant*

Results of Hasil non-parametric data analysis on the organoleptic test of colour, flavour, aroma and crunch of meatless floss revealed that the product valued at 5,8 – 6,2, which means that the meatless floss is considered preferable by the panellists. The results of the average organoleptic test of meatless floss are presented in Table 2.

Table 2. Organoleptic average test on meatless floss

Variables	Value Average	Criteria Test	Treatment (*)
Colour	5,6	Preferable	L1P2
Flavour	5,5	Preferable	L2P2
Aroma	5,3	Somewhat preferable	L2P3
Crunch	5,6	Preferable	L2P2

Water Content

Water content is highly important in quality parameter for food products, such as floss, because water content makes it possible for various reactions to lower the quality of food ingredients. Hence, some of the water content must be eliminated from the product. Low water content signifies long shelf life for the food product (Widarti, Wardani, Lutfi, & Nugroho, 2013). Jumiati & Fadzilla, (2018) stated that the decrease or increase of water content in a food product is caused by evaporation or absorption process, which is triggered by the environment condition.

Results of variance analysis in the water content of different boiling time has significant influence; different combination ratio of has significant influence; while the interaction between boiling time and a combination ratio of jackfruit rind and breadfruit had no significant influence towards water content of meatless floss. The average water content in meatless floss is presented in Table 3.

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Table 3. Average of water content in meatless floss based for different boiling time

Treatment (Boiling time)	Average Value	Standard Error
Boiling time 8 minutes (L1)	4,244	0,146
Boiling time 10 minutes (L2)	5,112	0,146

Results presented in table 3 indicated different water content values. Thus, researchers concluded that boiling time had a significant influence on water content, caused by the high water content in jackfruit rind and breadfruit. This result confirms (Nauw, Fatem, Husodo, & Sagrim, 2016), who stated that the boiling process could eliminate sap found in jackfruit rind and breadfruit.

The water content of the floss is high because jackfruit rind and breadfruit bind much water. High water content may induct microbes production, cause changes in the appearance of the product, as well as lower the shelf lives. Therefore, the water content of food ingredients must be determined so that the meatless floss can be given suitable treatment. Boiling time significantly affect water content in the meatless floss because longer boiling time increases the water content in the meatless floss. The standard quality of water content in the floss product is 7% maximum (BSN, 1995).

Ash Content

The results of ash content analysis showed that the interaction between boiling time and a combination ratio of jackfruit rind: breadfruit significantly affect ash content of meatless floss. Average of ash content in meatless floss is presented in Table 4.

Table 4. Average of ash content in meatless floss

Treatment Code	Treatment	Average of Ash content (%)
L1P1	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	6,0360[a]
L1P2	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	6,1460[a]
L1P3	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	7,3890[b]
L2P1	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	7,7600[bc]
L2P2	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	7,9370[c]
L2P3	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	8,1013[c]

Results presented in Table 4 indicated that treatment L1P1 and L1P2 yielded the same effect towards the low value of ash content, namely 6,0360% and 6,1460%. Treatment L1P3 has ash content value of 7,3890. Treatment L2P1, L2P2 and L2P3 have the same effect on ash content value, namely 7,7600%, 7,9370% and 8,1013%. The highest ash content value was obtained from treatment L2P3, namely 8,1013%, with 10 minutes boiling time and combination ratio of jackfruit rind and breadfruit 75%:25%. In 10 minutes boiling time, the ingredients bind most of the water. The remaining component causes the ash content of the meatless floss to be very high. (Rizal, Kustyawati, & Hasanudin, 2018) stated that ash content is the remaining components of organic material that is not removed during

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ashing period. Ash content is related to the mineral content of organic material. The purpose of determining the amount of total ash content is to find out whether the food processing has met the standard, to reveal the types of the food ingredients, and as the parameter of the nutritional value of food ingredients. According to (Tirza Jeli Ping, Rolan Rusli, 2016) stated that the effect of the processing could affect the minerals in organic materials.

Regarding with floss quality requirements in SNI 3707-1995 (BSN, 1995) which stated that the maximum value of ash content in meatless floss is 7%, then the ash content of jackfruit rind and breadfruit floss, namely 6% - 7%, is found to Sabarmati be in accordance with the regulation. Meanwhile, ash content that exceeds 7% is declared not in accordance with the requirements for floss quality standard.

Fat Content

Results of variance analysis in the fat content of combination ratio has significant influence; different combination ratio of has significant influence; while the interaction between boiling time and combination ratio of jackfruit rind and breadfruit had no significant influence towards fat content of meatless floss. The average fat content of meatless floss is presented in Table 5.

Table 5. The average fat content of meatless floss and different combination ratio of jackfruit rind and breadfruit.

Treatment Code	Treatment	Average Fat content (%)
LP1	Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	10,1512[a]
LP2	Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	11,3807[b]
LP3	Combination ratio of Jackfruit rind : Breadfruit (75%:25%)	12,9302[c]

Data in Table 5 revealed that the different combination ratio of jackfruit rind and breadfruit significantly affect the fat content of meatless floss. Thus it can be concluded that different treatment yields a different result. The combination ratio of jackfruit rind and breadfruit at 75%:25% yielded high-fat content in meatless floss, namely 12,9302%. Meanwhile, the combination ratio of jackfruit rind and breadfruit at 25%:75% yielded low-fat content in meatless floss, namely 10,1512%. Fat is an essential substance for human health which can be found in almost all food ingredients (Bayu, Rizqiati, & Nurwantoro, 2017). According to (Hartati, Jauhari, Meithiana, 2019) besides supplying some of the energy needed by humans, fat also serves as a provider of fatty acids and improves the taste of food. Fat is one of the nutritional content found in food ingredients. The purpose of adding fat is to improve the appearance and physical structure of food ingredients and also add nutritional value and give food a savoury taste (Noviyanty et al., 2020).

The high-fat content in P3 is thought to be due to the jackfruit rind which binds more fat during the floss frying process. During the frying process, water evaporates and is replaced by oil which is used for frying. The longer the frying process, the more oil will be absorbed. Related to the floss quality requirements in SNI 3707-1995 (BSN, 1995) which states that the maximum fat content of floss is 30%, then the fat content of 10% - 12% is still stated in accordance with the regulations.

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Rind Level

Results of variance analysis in the rind level showed that different boiling time has a significant effect, the different combination ratio of jackfruit rind and breadfruit and interaction between boiling time and combination ratio of jackfruit rind and breadfruit has no significant influence towards rind level of meatless floss. The average of rind level in meatless floss is presented in Table 6.

Table 6. The average of rind level in meatless floss in different boiling time.

Treatment (Boiling time)	Average Value	Standard Error
Boiling time 8 minutes (L1)	5,594	0,232
Boiling time 10 minutes (L2)	6,788	0,232

Results presented in Table 6 revealed different rind level values, thus the significant influence in boiling time treatments. This result is influenced by the raw material for making floss which has high fibre content and is suitable for health, which can absorb cholesterol and normalise blood fats (Rizal et al., 2018). The standard quality of rind level for floss is a maximum of 1% (BSN, 1995).

Colour

Average results of preferences test in meatless floss colour revealed that different boiling time and combination ratio of jackfruit rind and breadfruit yielded a different value of colour preferences, namely 4,6 – 5,6. This results indicated that the colour of meatless floss is rated somewhat preferable to preferable by the panellists. The average of meatless floss colour is presented in Table 7.

Table 7. average of meatless floss colours

Treatment Code	Treatment	Average Colour
L1P1	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	4,9
L1P2	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	5,6
L1P3	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	4,9
L2P1	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	5,1
L2P2	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	4,9
L2P3	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	4,6
Control	Beef Floss	5,1

Data in Table 7 revealed that boiling time 8 minutes treatment and combination ratio of jackfruit rind and breadfruit at 50%: 50% yielded high meatless floss colour value, namely 5,6 which signifies that meatless floss colour is rated to be preferable by the panellists. Meanwhile, boiling time treatment of 10 minutes with combination ratio of jackfruit rind and breadfruit at 75%: 25% yielded low meatless floss colour value, namely 4,6 yang which signifies that the panellists rated meatless floss colour to be somewhat preferable.

Based on the Kruskal Wallis test, it was found that there is a significant difference between the meatless floss colour in all treatments ($p = 0,049 < \alpha = 0,05$). These results

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mean that different boiling time and combination ratio of jackfruit rind: breadfruit has a significant influence towards panellists' preference in meatless floss colour.

FLAVOUR

Results of preferences test in the flavour of meatless floss revealed that different boiling time and combination ratio of jackfruit rind and breadfruit yielded different flavour preferences value of 4,7 – 5,5 which means that the flavour of meatless floss is rated at somewhat preferable to preferable by the panellist. The flavour average of meatless floss is presented in Table 8.

Table 8. The average of meatless floss flavour

Treatment Code	Treatment	Average Flavour
L1P1	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	4,7
L1P2	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	4,9
L1P3	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	4,8
L2P1	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	5,1
L2P2	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	5,5
L2P3	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	5,1
Control	Beef Floss	5,4

Data presented in Table 8 revealed that the treatment with boiling time 10 minutes, and the combination ratio of jackfruit rind and breadfruit at 50%: 50% yielded high meatless floss flavour value of 5,5. This result means that meatless floss flavour is rated preferable by the panellists. Meanwhile, eight minutes boiling time eight treatment and combination ratio of jackfruit rind and breadfruit at 25%:75% yielded low meatless floss flavour value, namely 4,7, which means meatless floss flavour is rated somewhat preferable by the panellists.

Based on the Kruskal Wallis test, it was found that there is an insignificant difference in all treatments ($p = 0,064 > \alpha = 0,05$) in the flavour parameter. It means that different boiling time and combination ratio of jackfruit rind: breadfruit had no significant effect on panellists' preferences in meatless floss flavour.

Aroma

The results of test preferences for the aroma of meatless floss can be seen in Table 9.

Table 9. The average value of meatless floss aroma

Treatment Code	Treatment	Average Aroma
L1P1	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	4,8
L1P2	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	4,9
L1P3	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	5,1
L2P1	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	5,1
L2P2	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	5,1

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Treatment Code	Treatment	Average Aroma
L2P3	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	5,3
Control	Beef Floss	5,4

The mean of the preferences test for the aroma of meatless floss which is presented in Appendix 16 shows that the boiling time and the combination ratio of jackfruit rind and breadfruit give preference values to the aroma from 4.8 to 5.4. That is, the aroma of meatless floss is rated somewhat preferable to preferable by the panellists.

The information in Table 8 shows that the boiling time treatment for 10 minutes with a combination ratio of jackfruit rind and breadfruit 75%: 25% produces a high aroma value of meatless floss, namely 5.3. That is, the aroma of meatless floss on a grade is somewhat preferable by the panellists. Meanwhile, the boiling time treatment for 8 minutes with a combination ratio of jackfruit rind and breadfruit at 25%: 75% resulted in a low meatless floss aroma value, namely 4.8, which means that the aroma of meatless floss on the market is somewhat preferable by the panellists.

Based on the Kruskal Wallis test, it was found that there were no significant differences between all types of treatment ($p = 0.080 > \alpha = 0.05$) in the meatless floss aroma parameter. This means that the different boiling time and combination ratio of jackfruit rind: breadfruit has no significant effect on the panellists' preference for the aroma of meatless floss.

Crunch

The results of the average preferences test for the crunch parameter on the meatless floss showed that the different boiling time and combination ratio of jackfruit rind and breadfruit resulted in a crunch preference value of 4.4 - 5.6, which means that the crunch from meatless floss is rated somewhat preferable to preferable by the panellists. The average of crunch parameter for meatless floss can be seen in Table 10.

Table 10. The average value of crunch

Treatment Code	Treatment	Average of Crunch
L1P1	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	4,4
L1P2	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	4,9
L1P3	Boiling time 8 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	5,0
L2P1	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (25%:75%)	5,2
L2P2	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (50%:50%)	5,6
L2P3	Boiling time 10 minutes, Combination ratio of Jackfruit rind: Breadfruit (75%:25%)	4,9
Control	Beef Floss	5,4

Table 10 shows that the boiling treatment time of 10 minutes with a combination ratio of jackfruit rind and breadfruit at 50%: 50% resulted in a high parameter crunch value for meatless floss, namely 5.6. This means that the parameter crunch in meatless floss is rated preferable by the panellists. Meanwhile, the boiling time treatment for 8 minutes with a combination ratio of jackfruit rind and breadfruit at 25%: 75% resulted in a low parameter

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crunch value for meatless floss, namely 4.4. This means that the parameter crunch on the meatless floss is rated somewhat preferable by the panellists.

A boiling time of 10 minutes resulted in a higher crunch value for meatless floss than a boiling time of 8 minutes. This difference is because the boiling time can affect the crunches in meatless floss. So, the longer the boiling time, the better the crunch value and the product will last longer. Therefore, the L2P2 treatment was rated preferable by the panellists with a value of 5.6. Conversely, the less the boiling time, the more easily damaged the meatless floss; panellists provide a preferable value with a crunch value of 4.4.

Based on the results of the Kruskal Wallis test, it is known that there is a significant difference in all types of treatment for the crunch parameter on meatless floss ($p = 0.043 < \alpha = 0.05$), which means that boiling time and combination ratio of jackfruit rind: breadfruit have a significant effect on the level panellists' preference for meatless floss crunch.

Effectivity Test

Effectivity test was conducted to determine the best treatment. Based on the results of the Effectivity test on all research parameters including the chemistry test and organoleptic test, it was found that the boiling time of 10 minutes with the combination ratio of jackfruit rind 50% and breadfruit 50% is the best treatment because it has the highest Yield Value (YV). The mean YV of all the effectiveness test parameters is presented in Table 11.

Table 11. Effectivity Test Yield Value of Research Variables

Parameter	Yield Value (Nh) Treatment					
	L1P1	L1P2	L1P3	L2P1	L2P2	L2P3
Water Content	0,05	0,03	0	0,14	0,11	0,13
Rind Level	0	0,06	0,06	0,11	0,13	0,14
Flavour	0	0,03	0,02	0,07	0,14	0,07
Fat Content	0	0,06	0,12	0,05	0,07	0,11
Colour	0,04	0,12	0,04	0,06	0,04	0
Aroma	0	0,02	0,07	0,07	0,07	0,12
Crunch	0	0,04	0,05	0,07	0,11	0,04
Ash Content	0	0,006	0,07	0,09	0,10	0,11
TOTAL	0,09	0,38	0,44	0,66	0,77*	0,73

Table 11 shows that L2P2 treatment, namely boiling time of 10 minutes with a combination ratio of jackfruit rind 50% and breadfruit 50% is the best treatment with the highest Yield Value (YV), namely 0.77. L2P2 treatment resulted in water content = 5.201%; rind level = 6.969%; flavour = 5.5 (somewhat preferable), fat content = 13.068%; colour = 5.6 (preferable); aroma = 5.3 (somewhat preferable); crunch = 5,6 (preferable); and ash content = 8,101%.

CONCLUSION

chemistry and organoleptic quality of meatless floss of jackfruit rind and breadfruit are strongly influenced by boiling time and combination ratio of jackfruit rind with breadfruit. The best treatment was found in L2P2 treatment, namely boiling time of 10 minutes with a combination ratio of jackfruit rind 50% and breadfruit 50% which produced the highest Yield Value (YV), namely 0.77. The research parameter criteria found the water content = 5.201%; rind level = 6.969%; flavour = 5.5 (somewhat preferable), fat content = 13.068%; colour = 5.6

(preferable); aroma = 5.3 (somewhat preferable); crunch = 5,6 (preferable); and ash content = 8,101%.

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