

Organoleptic Tests on Processed Products of Meatballs, Tofu Meatballs, Dumplings, and Herbal Drinks

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ABSTRACT

This study aims to analyze the level of consumer preference for processed meatball products, meatball tofu, and herbal drinks produced on a household scale. This research was carried out in 2 stages, the first was the production stage and the second was the organoleptic test stage with the hedonic method or consumer preference level analysis. The importance of this research is to find out the results of food processing that can be accepted by consumers and how much the consumer's preference level is, as well as to measure the response of food quality to the product. Processed products tested in this study were meatballs, meatball tofu, dumplings and herbal drinks. The product parameters tested in this study include general appearance, color, taste, texture, and aroma. The results showed that processed meatball products, meatball tofu, dumplings and herbal drinks produced on a household scale were generally well received and liked by consumers. However, there are several parameters such as taste and aroma that still need improvement. Improvements were made to improve and increase consumer preferences for processed products such as meatballs, meatball tofu, dumplings and herbal drinks.

INTRODUCTION

Meatballs are one of the food products from processed meat that are liked by all levels of society and all ages (Aprita et al., 2020). The main raw material is beef, which can also be chicken, in general, which is mixed with tapioca or sago flour and seasoned with spices, which are mixed together and ground until smooth, with added ice cubes during grinding until smooth, then molded into small to medium and large spheres, then cooked. with hot water in a saucepan. Sometimes for the processing of meatballs, there are usually ingredients such as gum or meatball flour and fillers, for example, quail eggs. The function of the thickening agent is to have good emulsion stability and prevent shrinkage when cooked and to expand the meatballs. The function of adding gum and fillers is to improve the stability of the emulsion, reduce shrinkage during heating. The meatball industry is very interested in opening stalls or cafes with various variations that are interesting and delicious for consumption by all levels of society.

The level of consumption of protein from eggs and chicken meat is higher than consumption of beef. Tofu, which is a traditional Indonesian food made from soybeans, is produced in small and medium scale industries, the technology is still simple, and it uses human power. In Indonesia, consumption of chicken meat tends to be higher, both broiler chicken and free-range chicken, compared to consumption of other meats. Chicken meat can be served in various ways, and can be used as a raw material for various types of processed food products, one of which is chicken dumplings. Dumpling is a type of dimsum that is sold both at street vendors and restaurants. Dumpling products are in great demand because of their delicious taste, relatively affordable prices, and practical way of serving.

In addition to fulfilling protein with various kinds of processed meat, health is also supported by consumption of herbal drinks obtained from biopharmaceutical plants such as ginger, lemongrass, pandan leaves, lime leaves, and cinnamon. Herbal drinks are in great demand by the people of Indonesia because they contain bioactive compounds that function to boost immunity and are drugs to cure various degenerative diseases such as heart disease, diabetes, cancer, tumors, tuberculosis, gout and others.

This study aims to analyze the level of consumer preference using hedonic or organoleptic tests. The problem faced is the quality of processing that uses less quality raw materials and uses excessive flavoring ingredients so that it is not good for consumption. Solving the problem is processing food ingredients such as meatballs, meatball tofu, dumplings and herbal drinks which are good for development on an industrial scale. The processing stage uses a systematically arranged scheme to produce quality food that has good nutritional value and is safe for consumption.

The study used a health drink consisting of green tea, ginger, lemongrass, sugar mixed together. The types of tea that are generally known in the community are green tea, oolong tea, black tea and white tea (Sandiantoro, 2012). Herbal drinks can be used as a processed product for the household industry which is made from parts of plants that have health benefits and consumed by brewing them with boiling water or using herbal drinks that are ready to drink (Anggraini et al, 2018). The meaning of meatballs is fine meat mixed with spices to taste, added with cornstarch or tapioca, stirred until homogeneous (Yunarni, 2012). Organoleptic test is a measurement parameter used to assess products based on the level of consumer liking so that they are suitable for consumption and marketing. So the results of the data obtained using a quantitative test using meatball samples, tofu meatballs, somay and herbal drinks. The panelists used were classified as skilled, consisting of students, employees and lecturers, around 30 people. Hypothesis: It is suspected that consumers like processed meatball products, meatball tofu, somay and herbal drinks that have been made at the Food Laboratory, Department of Agribusiness, UNISKA. Kediri. The aim of the research is to study the response level of consumer preference for the products produced. The benefit is to provide skills to students majoring in Agribusiness so they can process products and market them properly.

METHODOLOGY

This research was carried out in December 2022 at the Agribusiness Laboratory of the Faculty of Agriculture, Islamic University of Kadiri, Kediri. This type of research is experimental research by making 3 food products including processed chicken meatballs, tofu meatballs, dumplings and 1 herbal drink product produced by students of the Agribusiness Study Program.

This research was conducted in 2 stages. The first stage is the manufacturing process or production process. The second stage is the organoleptic test, in this case the hedonic test or analysis of consumer preferences. Parameters used include general appearance, color, taste, aroma and texture. Sulistiyo (2006) in (Rahmi et al., 2013) states that the hedonic scale can be stretched or collapsed according to the desired scale range. The hedonic scale can also be changed to a numerical scale with quality scores according to the level of preference. This study uses a test scale of 1-5. Score 1=dislike very much, 2=dislike, 3=neutral/almost like, 4=like and 5=like very much. The number of panelists in this study were 105 people consisting of 37 panelists processed chicken meatballs, 24 panelists processed tofu meatballs, 20 panelists processed dumplings, and 24 panelists processed herbal drinks. The panelists were given product samples and questionnaires in the form of a google form that had been provided. The method or way to process a data that has been obtained.

RESULTS

The level of consumer preference for processed chicken meatballs, tofu meatballs, dumplings and herbal drinks was carried out by organoleptic tests. The organoleptic test carried out is the hedonic test or preference test. Attributes tested include general appearance, color, taste, aroma, and texture with a scale of 1-5. Data from the panelists that have been collected are then processed using simple statistical analysis, namely calculating the average value. Panelist response data on processed chicken meatball products can be seen in Figure 1.

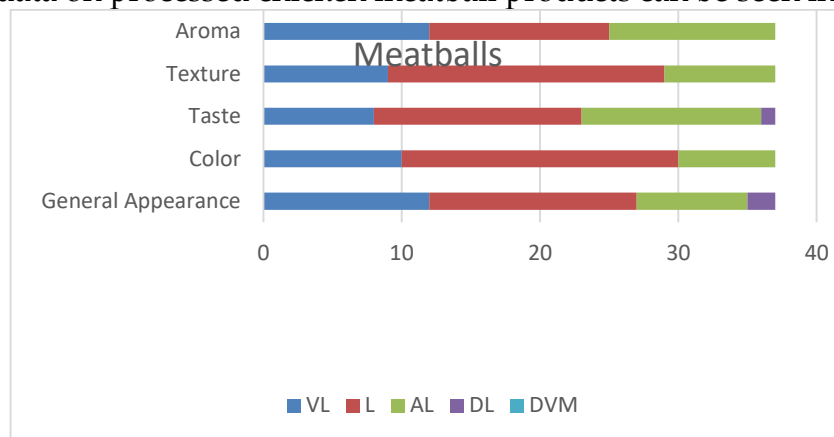


Figure 1. Response of Panelists to Processed Meatball Products

The organoleptic test results for processed meatballs in this study are presented in Table 1.

Table 1. Organoleptic Test of Processed Meatballs

Parameter	Score	The Level of Preference
General Appearance	4	Like
Color	4,1	Like
Taste	3,8	Almost Like
Texture	4	Like
Aroma	3,9	Almost Like

Source: Primary Data Processed in 2023

The next organoleptic test was on processed tofu meatballs. Tofu meatballs are one of the preparations in fulfilling vegetable and animal protein. This is because this product uses tofu raw materials which contain vegetable protein and chicken meat as a source of animal protein. The meatball tofu business is still a home industry that has a minimum capacity and requires insight into taste and packaging (Nurhartadi et al., 2018). In the tofu meatball organoleptic test, there were 24 panelists involved. Panelist response data on processed tofu meatball products can be seen in Figure 2.

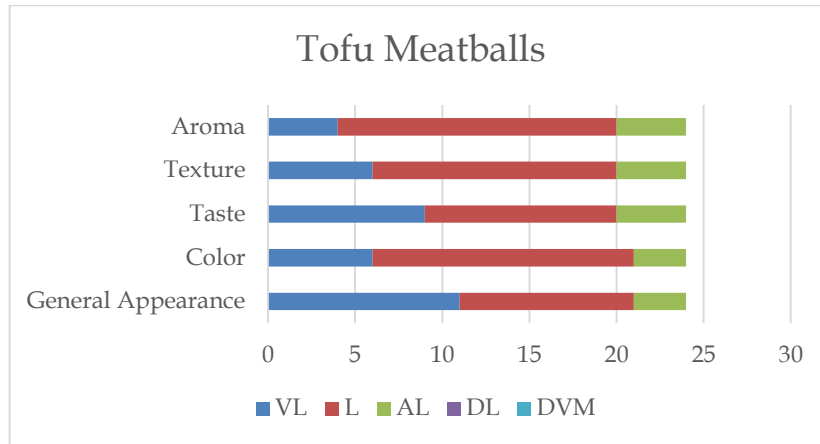


Figure 2. Response of Panelists to Processed Tofu Meatballs

Based on the test results data showed that in general the panelists liked processed tofu meatball products. Processed tofu meatballs were liked by the panelists starting from the general appearance, color, taste, texture and aroma. This shows that processed tofu meatballs are acceptable to consumers. Data on organoleptic test results for tofu meatballs can be seen in Table 2.

Table 2. Organoleptic Test of Tofu Meatballs

Parameter	Score	The Level of Preference
General Appearance	4,3	Like
Color	4,1	Like
Taste	4,2	Like
Texture	4,1	Like
Aroma	4	Like

Source: Primary Data Processed in 2023

Dumpling is a type of dimsum that is sold both at street vendors and restaurants. Dumpling products are in great demand because of their delicious taste, relatively affordable prices, and practical way of serving. There are several factors that determine the quality of food ingredients including color, taste and nutritional value. The panelists involved in the organoleptic test of dumpling processed products totaled 20 people. Panelist response data on dumpling processed products can be seen in Figure 3.

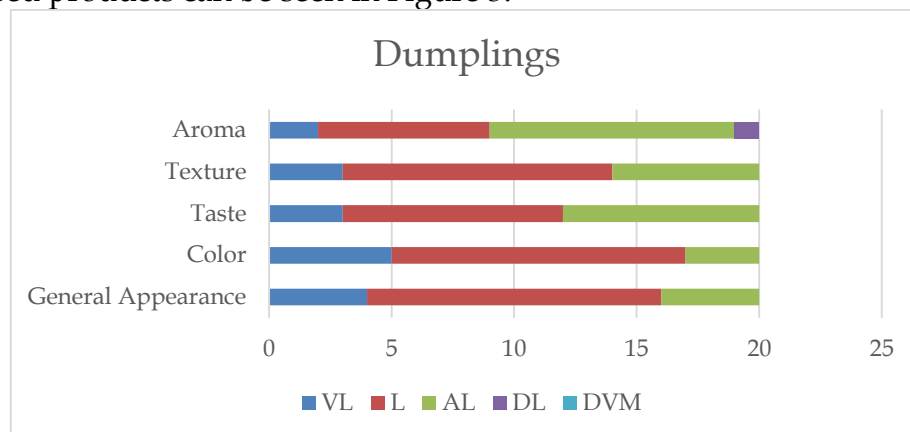


Figure 3. Response of Panelists to Dumpling Processed Products

The cooking technique also affects the results of dumplings. When frying fried dumplings, you need to pay attention to the size of the fire. If the fire is too big, the outer skin of the dumplings will cook but the inside will not be cooked. When frying dumplings, it's better to use low heat because the skin of dumplings gets overcooked and burns easily. In steaming dumplings, you need to pay attention to how long the dumplings will cook because when you put the dumplings in the steamer, the skin will cook easily, you have to estimate the maturity of the inside of the dumplings. Data on organoleptic test results for dumpling processed products can be seen in Table 3.

Table 3. Organoleptic Test of Dumplings

Parameter	Score	The Level of Preference
General Appearance	4	Like
Color	4,1	Like
Taste	3,8	Almost Like
Texture	3,9	Almost Like
Aroma	3,5	Almost Like

Source: Primary Data Processed in 2023

From the organoleptic test results for dumplings processed products in Table 3, it can be seen that the general appearance and color parameters are liked by the researchers. However, the parameters for taste, texture and aroma still need improvement to increase the panelists' preference value. This herbal drink is made from selected main ingredients, namely ginger, lemongrass, pandan leaves, lime leaves, and cinnamon. To add to the enjoyment of taste, you can use a mixture of brown sugar and white sugar. Herbal drinks should be served warm, so they taste more delicious and have the effect of increasing the body's immunity. On this occasion the research team involved 24 panelists to provide an assessment of the parameters tested. Panelist response data on herbal drink products can be seen in Figure 4.

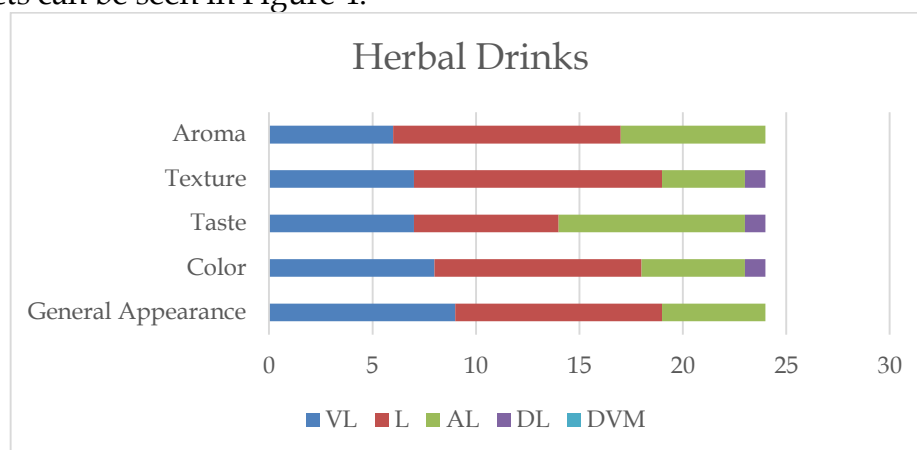


Figure 4. Response of Panelists to Herbal Drink Products

The organoleptic test results of the herbal drinks stated that the panelists liked the general appearance, color and texture of the herbal drinks. Meanwhile, the parameters of taste and aroma may be improved to increase consumer preference. Things that can be done to improve taste and aroma include balancing the use of aromatic ingredients such as lime leaves, pandan leaves and lemongrass. The organoleptic test results for herbal drinks are stated in Table 4.

Table 4. Organoleptic Test of Herbal Drink

Parameter	Score	The Level of Preference
General Appearance	4,2	Like
Color	4	Like
Taste	3,8	Almost Like
Texture	4	Like
Aroma	3,9	Almost Like

Source: Primary Data Processed in 2023

The community is familiar with the use of traditional medicinal ingredients as an effort to maintain health, prevent disease and health care (Sari & Cahyaningrum, 2017; Taufiq, 2022). These ingredients come from biopharmaceutical plants such as turmeric, ginger, cinnamon, pandan leaves, lime leaves, and lemon grass. A healthy lifestyle can be carried out by consuming healthy foods and herbal drinks that do not cause side effects if consumed regularly and appropriately. The public can take advantage of these biopharmaceutical plants to maintain the immune system.

DISCUSSION

According to Putri (2009), the stages of making meatballs start from smoothing the meat, mixing the dough with additional spices, molding, followed by the cooking stage until the meatballs are cooked. The crushing of the meat is intended to increase the surface area of the meat for protein dissolution and the change of soft tissue into microparticles. The dough used is meat that has been mashed and added with salt, spices, flour, and stirred until well blended or homogeneous. The addition of flour to meatball dough as a filler is useful for improving texture, reducing cooking shrinkage, increasing water holding capacity, and product elasticity (Montolalu et al., 2017).

The next stage is molding. According to Yunarni (2012), the process of molding meatballs can be done by hand by kneading the dough then pressing the thumb and forefinger then the dough will come out and be taken using a spoon. The process of cooking meatballs needs to pay attention to temperature, this is related to the protein denaturation process in meatballs. Things that can be done to improve the taste and aroma of the chicken are to increase the amount of chicken meat, as well as spices such as garlic and salt, and add fried onions. One of the steps to improve product quality and competitiveness is through quality and sensory improvements, namely the taste and aroma components (Hafiz, 2017). These two components can be rearranged by adjusting the seasonings including salt, flavor, and garlic without changing the proportion of meat and flour.

In general, processed meatballs were liked by the panelists. However, there are still some parameters that need to be improved, such as taste and aroma so that the level of preference increases (even higher). Research by Firahmi et al., (2017) showed the organoleptic results of meatball flavor that panelists liked the most, namely the use of withered meat which produced a slightly bright color and the best texture of meatballs using fresh meat without wilting. In order to know that meatballs have high competitiveness, quality control is needed to maintain product quality consistency (Hidayatullah & Purwanggono, 2022). One way to control quality is good packaging so that the product can last longer. Packaging is carried out by means of a vacuum, namely removing air in the package to inhibit the oxidation process and the pasteurization process to kill microorganisms that can contaminate the product (Hidayat et al., 2020).

Winarno (1997) states that the taste component is a determining factor in consumer acceptance of food products. Soft texture is obtained from mashed chicken, chicken meat has a softer texture compared to beef. Meanwhile, the chewy texture is obtained by adding tapioca flour. Tapioca flour gives a chewy texture, different from wheat flour. The addition of tapioca has an effect on the processed water content but has no effect on the resulting texture (Ahmadi et al., 2007). When eaten, dumpling has a savory taste produced by the addition of spices in the form of salt, sugar, flavourings, and also pepper.

Dough with a ratio of flour and meat and the type of flour greatly affects the organoleptic quality (Candra et al., 2020). The use of this type of flour in food processing can affect the content and quality of a food. Hidayati et al., (2017) stated that high protein flour is suitable for mixed ingredients for dumplings. However, usually the people or dumpling sellers use low-protein wheat flour which is sold cheaply in the market, so the result is sometimes hard and tough, and consumers don't like it. So to improve the taste and texture of processed dumpling products, you can use a mixture of high protein flour so that the results are more liked by consumers. In addition, herbal drink products that are properly processed and packaged can also be used as a factor for increasing or supporting the economy and people's income. Several biopharmaceutical plants are available in Kediri Regency such as ginger, turmeric, galangal, and so on with the basic commodity being turmeric (Maharani et al., 2021).

CONCLUSIONS AND RECOMMENDATIONS

Processed meatball products, meatball tofu, dumplings and herbal drinks produced on a household scale are well received and liked by consumers. However, there are several parameters such as taste and aroma that still need improvement. Improvements were made to improve and increase consumer preferences for processed products such as meatballs, meatball tofu, dumplings and herbal drinks. The resulting processed products come from ingredients that are easy to find, affordable prices, and the method of manufacture is relatively easy but still has a high nutritional content and is good for health. Processing activities can increase product added value and product selling value so as to increase economic value and people's income.

The composition of the use of processed raw materials for meatballs, meatball tofu, dumplings and herbal drinks needs to be considered and their quality/quality maintained. It is intended that processed products produced based on general appearance, color, taste, texture and aroma have good quality and are maintained so that consumers like them. Further research is needed regarding business planning analysis for processed meatball products, meatball tofu, dumplings and herbal drinks.

FURTHER STUDY

We suggest to continue research on various processed products that are tested organoleptically in order to improve their quality.

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