15th National Student Conference on Food Science and Technology

Integrating Innovative Food Product Development and Consumer Preferences through Sensory Evaluation

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EFFECT OF CHROMANONE DEAMINE DOSAGES ON THE QUALITY OF OSMOMEAT PRODUCTS IN TERMS OF PHYSICOCHEMICAL CHARACTERISTICS

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ABSTRACT

Osmomeat is a processed meat products that use osmotic dehydration process in reducing the water content of the meat. Processed meat products are often associated with high protein and low fat content. In order to improve the quality of the product, chromanone deamine applied into chicken meat is used as main ingredient manufacture osmomeat. Chromanone deamine compound has been applied in broiler chickens and is proven increasing the protein content, lowering fat content of meat, and consequently increasing the hardness of the meat. Chromanone deamine compound is able to improve the physical and chemical quality of osmomeat, but still not known how the effects and the most appropriate dosage to improve the meat processed product. The purpose of this research was to determine the effect of osmomeat chromanone dose in *osmomeat* product in terms of physicochemical. Methods in this study includes preparation materials, osmotic dehydration process, and the final drying. Materials research using meat broiler chest with various doses difference chromanone (without chromanone, 1 ml, 5 ml and 10 ml). The osmotic dehydration process using 60% sugar-salt solution. Drying step is done using a dehumidifier at 60 °C for 1 hour. Evaluation of the osmomeat product include hardness, water content, water activity, protein, and fat content. Hardness value of the sample by addition of 1 ml dose of chromanone deamine was 3818,186 ± 295.759 gf or showed a decrease compared to the control, then the value of hardness in the sample with chromanone deamine dose of 5 ml and 10 ml began to increase back. Chromanone deamine dosage not significantly affect the value of water activity. The water content and fat content of the samples showed a decrease in line with the increase in chromanone deamine dose given. The protein content of osmomeat product optimum at 5 ml dose in the amount of 28.387 ± 0.194 %, or increase 4.22 % compared to control.

Keywords : *broiler chcken meat, osmomeat, osmotic dehydration, chromanone deamine*

INTRODUCTION

Meat is a nutritious food that humans need. This is because high-quality protein and essential amino acid content of a complete and balanced. Dagingpun more digestible protein than vegetable. Chicken meat is more popular with the public than other meats and poultry, because it is easier cooked chicken meat, as well as nutritional content is high enough. Broiler chicken is one of the leading commodity and most in demand by the community (Brown, 2003 in Mehaffey et al, 2006). Results of data collection by BPS in 2014 also showed that the Indonesian people consume more chicken meat compared with domestic poultry meat, and the level of consumption of society will continue to increase each year (Respati et al, 2014).

Osmomeat is processed meat products involving osmotic dehydration process in the making. Dehydration is a process of osmosis water expenses, by immersion / marinasi groceries in a hypertonic solution (Misljenovic et al, 2012). Osmotic dehydration is also a preservation method without phase change on the product, as well as to maintain the organoleptic properties (Barbosa - Canovas and Vega-Mercado, 1996 in Sunjka and Raghavan, 2004). Osmotic solution that is widely used is salt or sucrose or kombinasinya.Pada osmotic dehydration of the fruit usually used sucrose, whereas the osmotic dehydration of vegetables, fish and meat are used NaCl (Rahman, 2007). But the combination of different solutes can be used to increase the effectiveness of the osmotic dehydration process (Khan, 2012).

Osmomeat is a new and innovative products that provide processed meat products with the texture and quality of quality. Osmomeat very popular and newly developed in foreign countries, but so far only limited to beef and pork. Seeing this, the processing of chicken meat in particular types of broiler very potential to be developed as an innovative food products, one of which is a product osmomeat. To improve the quality of the product 2,6,7-chromanon deamine compound applied to the chicken meat is used as main ingredient manufacture osmomeat. 2,6,7-chromanon deamine compounds naturally present in the flesh of the fruit Maja (Aegle Marmelos L. Corr). 2,6,7-chromanon deamine is cyclo-benzene compound, an alkaloid class of aromatic compounds in the form of two groups that are bound into one double bond between two carbon chain connecting. 2,6,7-chromanon deamine compound in the flesh of the fruit in the form 2,6,7-chromanon amine.

Based on the physicochemical characteristics, 2,6,7-chromanon amine can be extracted to 2,6,7-chromanon deamine. 2,6,7-chromanon deamine. Extraction is done by drying maja fruit that is fresh and cooked until the moisture content reaches 12%. Maja dried fruit are then crushed and extracted using low temperature and vacuum conditions (Indoherb Medical Science, 2008). The chemical reaction of deamination 2,6,7-chromanon deamine maja fruit can be described as follows:

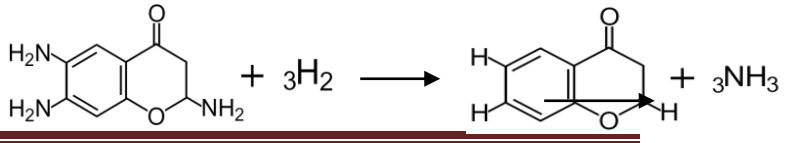

Figure 1. The reaction of 2,6,7-chromanone amine became 2,6,7-chromanone deamine Addition compounds 2,6,7-chromanon deamine aims to increase the protein content and lower fat content in the final product. Some studies indicate that the application 2,6,7-chromanon deamine can increase as much as 1-3% protein content and lower fat content as much as 0.8 to 1.2% in broiler meat (Sunaryanto and Sumardi, 2008).

MATERIALS AND METHODS

Sample Preparation

The study was conducted by using chicken day old chick (DOC) 999 brands ITB separated into four treatment groups and maintained for 30 days. 2,6,7-chromanon deamine compound applied to the livestock drinking water with different doses for each treatment group 0 ml (control), 1 ml, 5 ml, 10 ml. Applications 2,6,7-chromanon deamine done in the morning and afternoon. Slaughter carried out after 30 days of maintenance. Carcasses taken the chest to be used as a sample.

Procedure to Make Osmomeat

Chest broiler meat washed and carried deboning process, then mashed with a meat blender. Each sample using chicken meat weighing 100 grams. Then the meat flattened to a thickness of 2-3 mm. Furthermore marinasi into the meat in salt sugar solution at 60% concentrations respectively for 2 hours as osmotic dehydration stage. After that osmomeat dried in a dehumidifier at 60 ° C for 1 hour. The sample of osmomeat was then analyzed for Hardness, Water Content, Water Activity, Protein Content, and Fat Content (AOAC, 1995)

RESULTS AND DISCUSSION

Table 1. Comparison of Hardness, Water Content, Water Activity, Fat, and Protein of osmomeat under treatment 2,6,7-Chromanone Deamine and Control

Parameters	Control	Treatment 1 (1ml)	Treatment 2 (5 ml)	Treatment 3 (10 ml)
Hardness (gf)	4870,01 ± 233,227^{c}	3818,19 ± 295,759^{a}	4620,55 ± 166,743^{b}	5240,50 ± 349,222^{d}
Water Content (%)	27,56 ± 0,874^{d}	26,38 ± 0,772^{c}	22,60 ± 0,617^{b}	21,63 ± 0,503^{a}
Water Activity	0,67 ±0,019^{a}	0,68 ±0,019^{a}	0,68 ±0,018^{a}	0,67 ±0,023^{a}
Fat (%)	2,29 ± 0,375^{b}	2,14 ± 0,399^{ab}	2,11 ± 0,377^{ab}	1,97 ± 0,332^{a}
Protein (%)	22,34 ± 0,247^{a}	24,26 ± 0,096^{b}	28,39 ± 0,194^{c}	22,19 ± 0,290^{a}

Note: Figured followed by the same letter, indicates significanlly different at 95% degree of confidence in column at each parameters

Hardness of Osmomeat

The results showed that a dose 2,6,7-chromanon deamine influence the change of the decrease in the level of hardness compared to the control. 2,6,7-chromanon deamine sample with a standard dose (1 ml) showed a decrease in the level of hardness of by 19.39% to 3818.186 ± 295.759, this is caused by 2,6,7-chromanon deamine compounds which cause the texture of chicken meat becomes more tender. Therefore it will also affect the texture of the final product. But the test results showed an increase in dose 2,6,7-chromanon deamine texture 5 although still under the control sample hardness. Based on the test results showed that the samples osmomeat with a dose of 10 ml 2,6,7-chromanon deamine have a higher level of hardness samples compared to control. This may be caused by the decrease of water content in the sample cause the rank of hardness increase. Increase in violence is due to the increase in protein osmomeat. The higher the protein content, the higher the level of hardness.

Water Activity of Osmomeat

The results showed that 2,6,7-chromanon deamine given dose did not significantly affect water activity (A_w) significantly, whereas the concentration larutanlah influencing impairment A_w sample. In the test results of water content is based on the effect of dose 2,6,7-chromanon deamine not have a significant influence. It membuktikkan that 2,6,7-chromanon deamine given does not affect the water activity of the product osmomeat. Results showed that the decrease in water content osmomeat not followed by a decrease in the value of A_w. It is said also by Winarno (2004) which says that each food has a curve of adsorption and desorption curves are different. Foodstuffs that have a lower water content does not necessarily have the same A_w value low.

Water Content of Osmomeat

Water is an important component in foodstuffs. All foods contain water in varying amounts. The water content is very influential in determining the shelf life of foods, as these factors will affect the physical properties and chemical (Winarno, 2004). Water also reacts with proteins, polysaccharides, and fat having a significant effect on the texture. Therefore, a decrease in water content in food to extend shelf life and improve the quality of the food product. The results showed a significant reduction in the moisture content of a control sample to a dose 2,6,7-chromanon deamine 10 ml. Value moisture control sample amounted to 27.560 ± 0.874%, and a decline of 1.28% to 26.383 ± 0.772% in the samples with a dose 1. Then there is a decrease again on a sample dose of 5 2,6,7-chromanon deamine be 22,600 ± 0.617% or 3.94%, while the water content of the sample shown by the lowest dose that is equal to 2,6,7-chromanon deamine 10 21.631 ± 0.503. 2,6,7-chromanon deamine compounds can trigger the body's excretion of the chicken so it will affect the water content in the meat. Chicken with 2,6,7-chromanon deamine higher doses would cause the water level is become lower.

Protein Content of Osmomeat

The results showed a significant increase in protein content. Value protein content of a control sample of 22.337 ± 0.247%, and

an increase of 1.77% to 24.257 ± 0.096% in the samples with 1 ml dose 2,6,7-chromanon deamine. Then increased again at doses of 5 ml samples 2,6,7-chromanon deamine by 4.22% to 28.387 ± 0.194%. But at 10 ml sample 2,6,7-chromanon deamine doses actually decreased protein content of 6.44% compared samples 2,6,7-chromanon deamine 5 ml dose. These results showed the highest protein content was obtained on samples with 2,6,7-chromanon deamine dose of 5 ml, whereas at a dose of 10 ml begin to decreased levels of the protein. The results showed increased significantly 2,6,7-chromanon deamine also increase levels of a protein to its optimum limit is 2,6,7-chromanon deamine 5 ml. Increased protein content, indicating that the compound 2,6,7-chromanon deamine can increase protein synthesis in the body of the chicken. These results are also consistent with research Sunaryanto & Sumardi (2008) which indicates that the application 2,6,7-chromanon deamine able to increase protein levels.

Fat Content of Osmomeat

The results showed the higher dose given 2,6,7-chromanon deamine the fat content will decrease. The value of the control sample fat content of 2.29 ± 0.375, then continued to decrease with increasing dose 2,6,7-chromanon deamine given. Produced the lowest fat content in the sample 2,6,7-chromanon deamine osmomeat with a dose of 10 ml which is equal to 1.967 ± 0.332. This indicates that the reduction in fat may increase the 2,6,7-chromanon deamine compounds β-oxidation of fatty acids resulting in lower fat content of broiler chicken breast meat such as cholesterol and triglycerides. Fat loss can also be caused by compounds 2,6,7-chromanon deamine that increasing the protein content in chicken meat. Increased protein levels will lead to decreased levels of fat (Winarso, 2003).

CONCLUSIONS

1. The application of 2,6,7-Chromanone Deamine significantly influence on the texture, moisture content, protein content, and fat content on osmomeat product.
2. The higher the dosage of 2,6,7 Chromanone Deamine cause a decrease in water levels and fat content.
3. The higher the dosage of 2,6,7-Chromanone Deamine significantly increased protein content in osmomeat until the optimum dosage is 5 ml.
4. 5 ml dose of 2,6,7-chromanon deamine is the optimum dose in increasing protein content of osmomeat product.
5. The application of 5 ml dose of 2,6,7-chromanon deamine increased protein content from 22,34% to 28,39% (4,22%) and decreased fat content from 2,29% to 2,11% (7,86%).
6. This finding needs further detail investigation on the processing technologies suitable to maintains osmomeat characteristic.

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