Uffect Of Adding Vaname Shrimp Powder *(Litopenaeus Vannamei)* on Organoleptic Test in Shrimp Pudding

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Abstract

Indonesia is famous for its wide variety of processed foods and very abundant food resources. One of them is pudding. Pudding is a type of dessert that is popular with many people of various ages. Pudding is in great demand because of its sweet taste and soft texture, especially with the addition of fruit or vegetables to the pudding. Apart from that, it can also be applied with the addition of vaname, which can increase the nutritional value of the pudding. The aim of this research is to determine the level of people's liking for shrimp pudding. The main treatments in this study included five treatments that varied with the addition of shrimp powder, divided into four groups: UP0 (0 gr), UP1 (10 gr), UP2 (20 gr), UP3 (30 gr), UP4 (40 gr), UP5 (50 gr). I am like a test with 60 panelists. This research design will implement a completely randomized design (CRD) with four repetitions. ANOVA statistical test was carried out to analyze the data. If there were significant differences between food treatments, it was continued with the Duncan test.

Keywords :Vaname Shrim, Pudding, Shrimp Powder

Introduction

Indonesia is famous for its wide variety of processed foods and abundant food resources. One of them is pudding. Pudding is a type of dessert that is popular with many people of various ages. It is in great demand because of its sweet taste and soft texture, especially when fruit or vegetables are added to it.

Apart from that, it can also be applied with the addition of vaname, which can increase the nutritional value of the pudding. One of the aquatic products in Central Java Province that is abundant is vaname shrimp. The catch of vaname shrimp seen from 2018 data was 221 tons (Central Java Province Fisheries and Maritime Service, 2020). The nutritional value of VANAME shrimp (Litopenaeus vannamei) is relatively high, with crude protein content (19.38%), while in the dry state, it increases to (59.4%), crude fat (0.82%) and carbohydrates (6.10%). %). (Suparmi et al., 2017).

According to Prabowo et al., (2016) the use of protein hydrolyzate powder as a substitute, fortification and addition material in making food products is an alternative to increase protein consumption and the nutritional quality of products. Apart from that, the use of hydrolyzate can improve the characteristics of food products, one of which is pudding. Based on studies carried out by the European Food Safety Authority (EFSA), a person's daily protein needs can vary based on age, gender and physical activity. Protein requirements are generally around 0.38 grams per kilogram of body weight, but for physically active people, daily protein requirements can increase to 1.2 – 1.7 grams per kilogram of body weight.

However, even though the addition of dried vaname shrimp to pudding can increase the protein and carbohydrate content, not many researchers have investigated its effect, therefore

this study intends to test the effect of adding dried vaname shrimp powder to increase the protein and carbohydrate content in pudding.

Materials and Methods

Use of Shrimp Flour in Food Ingredients

One alternative modern use of shrimp is as shrimp flour. Shrimp flour is one choice of protein source. The positive factor for shrimp flour is that this product is a guaranteed sustainable supply so the price will be quite stable and its nutritional content is competitive with other raw materials (Boenga, 2011).

Protein in Food

Protein is an important macronutrient that plays an important role in the human body's ability to build and restore various body tissues, such as muscles, skin, hair and nails. Apart from that, protein also contributes to helping the immune system, producing enzymes and hormones, and maintaining fluid and electrolyte balance in the body. The main sources of protein in food are meat, fish, eggs, milk, nuts and seeds. These various protein sources have different biological values, which refer to the protein's ability to be absorbed and used by the body. For example, protein in meat and fish has a higher biological value than protein in nuts and seeds.

Protein content

Protein content measurement employs the Kjeldahl method. The procedure commences by weighing 5 grams of finely ground sample. Subsequently, the sample is placed into a pre-prepared Kjeldahl flask. Next, 7 grams of K_2SO_4 and 0.8 grams of $CuSO_4$ are added to the flask. The destruction process involves heating the sample in the Kjeldahl flask using an electric heater until its color changes to light green. Afterward, the Kjeldahl flask is allowed to cool for 20 min before adding 25 mL of distilled water. Following this, 50 mL of 40% NaOH solution and a few boiling stones are added to the flask, and distillation is conducted using a distillation apparatus. Finally, the distillate is titrated with a 0.1 N HCl standard solution until it turns pink. Thus, the Kjeldahl method offers a systematic approach for accurately measuring protein content in samples (Hasdar *et al*., 2019).

Organoleptics in Food Products

Organoleptic is a test of food ingredients based on preferences and willingness to use a product. Organoleptic testing or sensory testing or sensory testing itself is a method of testing using human senses as the main tool for measuring product acceptability. Organoleptic testing has an important role in implementing quality. Organoleptic testing can provide indications of spoilage, quality deterioration and other damage to the product (Agusman, 2015).

Pudding and is Quality

Pudding is a snack after the main meal that is commonly known and consumed by the public. Pudding is made from instant pudding flour or gelatin flour with a mixture of milk powder, cocoa powder and thickening agent (gelling) mixed homogeneously. The term pudding was used in medieval Europe for a dish of wrapped meat. In Great Britain, the term pudding is often used for desserts made from eggs and flour, and cooked by steaming or boiling (Almatsier, 2011). Pudding is also used as a dessert which has a sweet taste. There is also a type of pudding that is not made from gelatin, namely from eggs and a mixture of starch. The raw material for pudding is seaweed flour or gelatin which is then processed by adding water and cooking until it produces a gel. Making pudding is not that difficult, the ingredients are simple, but even though it is simple, it requires carefulness and accuracy in mixing the various ingredients to produce pudding with the taste and texture you want. If it's not quite right, the resulting pudding will be too soft or too hard. Both are equally undesirable. Because what is

desired is a pudding that is soft, smooth, nothing hard, not soft, pleasing to the eye and delicious to eat (Fajriyah and Oktafa, 2020).

Research design

This research uses this research. This research will be carried out using the Completely Randomized Design (CRD) method with 3 replications (Hasdar et al., 2021). The treatment given was the addition of dried vaname shrimp to the pudding making with different levels into four groups: UP0 (0 gr), UP1 (10 gr), UP2 (20 gr), UP3 (30 gr), UP4 (40 gr), UP5 (50 gr).

Data analysis

Data analysis was carried out using ANOVA (Analysis of Variance). If statistical tests using ANOVA provide significant results, then Duncan's post-hoc test is carried out to find out which treatment group shows the most significant results.

Results and Discussion

Organoleptic Test Results

The results of the organoleptic test on shrimp pudding carried out by 60 panelists were taken using 4 parameters, namely color, texture, aroma and taste with a rating range of 1 – 9.

Level of Likeness for Colors

One of the important parameters of product quality apart from taste and nutritional value is color (Prayogi, 2004). Where the observations made by the researchers regarding the color of shrimp pudding produced the data in table 1.

Table 1. Level of Likeness for Colors

Parameter	Number of Treatments Adding Vanamei Shrimp to Pudding					
	UP 0	UP 1	UP 2	UP 3	UP 4	UP 5
Colors	7.00 ± 0.504[a]	6.10 ± 0.430[a]	6.20 ± 0.413[b]	6.40 ± 0.320[c]	6.60 ± 0.507[d]	6.30 ± 0.403[e]

The data in the diagram in Figure 1 shows that the color observation with the highest favorability value was in the UP4 treatment (40 grams of vanamei shrimp powder added) with a mean of 6.60 and the lowest result was in the UP1 treatment (10 grams of vanamei shrimp powder added) with a mean of 6.10 when compared with 5 samples (excluding Control). In accordance with the statement of Chien et al. in Yusuf (2011) that browning of products is caused by the protein content in fishery products such as fish and shrimp. This reaction occurs quickly when heated above the melting point, the color changes from dark to brown.

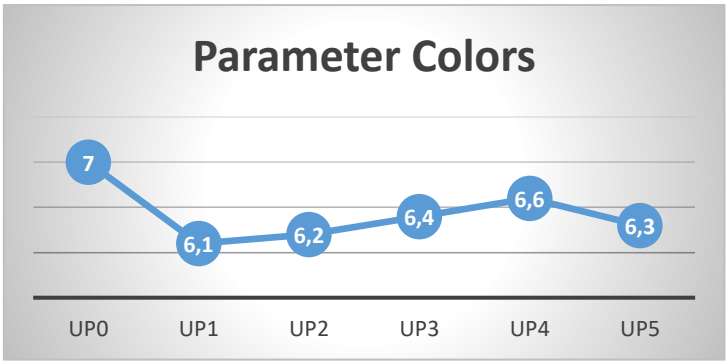

Figure 1. Color Parameter Diagram

Level of Likeness for Flavour

Aroma is the smell of a food which is very subjective and difficult to measure because of differences in sensitivity and preferences for each person (Melyani et al, 2022), where shrimp pudding was tested by 60 panelists with the results presented in the following table :

Table 2. Level of Likeness for Flavour

Parameter	Number of Treatments Adding Vanamei Shrimp to Pudding					
	UP 0	UP 1	UP 2	UP 3	UP 4	UP 5
Flavour	6.60 ± 0.504[a]	6.30 ± 0.340[a]	6.00 ± 0.403[b]	6.40 ± 0.465[c]	6.70 ± 0.586[d]	6.30 ± 0.501[e]

The data in the diagram in Figure 2 shows that the Flavour observation with the highest favorability value was in the UP4 treatment (40 grams of vanamei shrimp powder added) with a mean of 6.70 and the lowest result was in the UP2 treatment (20 grams of vanamei shrimp powder added) with a mean of 6.00 when compared with 5 samples (excluding Control). According to Sovyani et al (2019) a good aroma will increase the panelists' level of liking for a food product.

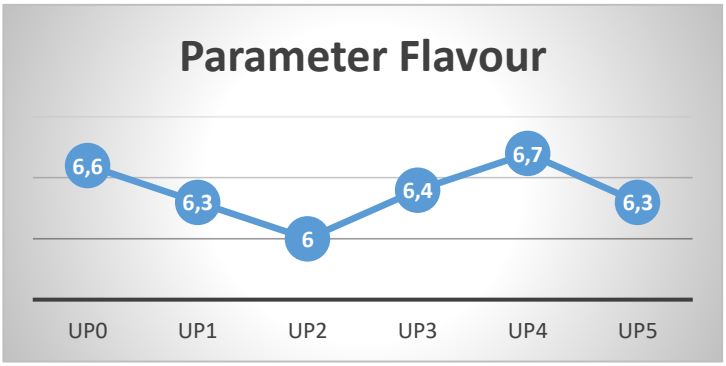

Figure 2. Flavour Parameter Diagram

Level of Likeness for Taste

Taste is an assessment of a product using the sense of taste, where shrimp pudding was tested by 60 panelists with the results presented in the following table :

Table 3. Level of Likeness for Taste

Parameter	Number of Treatments Adding Vanamei Shrimp to Pudding					
	UP 0	UP 1	UP 2	UP 3	UP 4	UP 5
Taste	6.50 ± 0.449[a]	6.10 ± 0.540[a]	6.57 ± 0.572[b]	6.00 ± 0.465[c]	5.70 ± 0.334[d]	5.40 ± 0.331[e]

The data in the diagram in Figure 3 shows that the taste observations with the highest favorability value were in the UP2 treatment (20 grams of vanamei shrimp powder added) with a mean of 6.57 and the lowest results were in the UP5 treatment (50 grams of vanamei shrimp powder added) with a mean of 5.40 when compared with 5 samples (excluding Control). The stronger the flavor of the vanamei shrimp in the pudding, the more fishy the vanamei shrimp taste.

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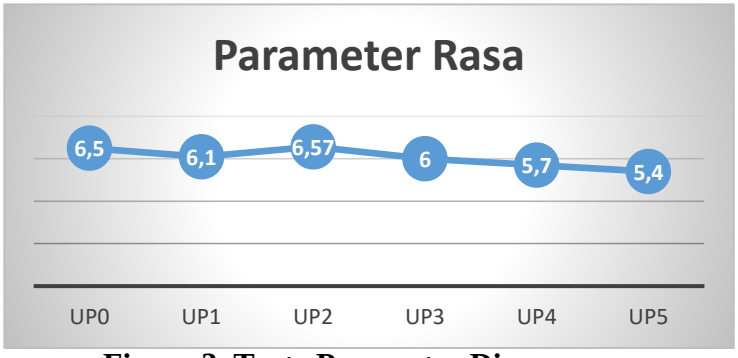

Figure 3. Taste Parameter Diagram

Level of Likeness for Texture

The texture of the shrimp pudding was tested by 60 panelists with the results presented in the following table :

Table 4. Level of Likeness for Taxture

Parameter	Number of Treatments Adding Vanamei Shrimp to Pudding					
	UP 0	UP 1	UP 2	UP 3	UP 4	UP 5
Texture	6.70 ± 0.504[a]	6.50 ± 0.509[a]	5,90 ± 0.572[b]	6.40 ± 0.572[c]	6.80 ± 0.668[d]	5.40 ± 0.567[e]

The data in the diagram in Figure 4 shows that texture observations with the highest favorability value were in the UP4 treatment (40 grams of vanamei shrimp powder added) with a mean of 6.80 and the lowest results were in the UP2 treatment (20 grams of vanamei shrimp powder added) with a mean of 5.90 when compared with 5 samples (excluding Control). The texture of the pudding becomes denser with the addition of vanamei shrimp powder which is influenced by cooking and the coconut milk mixture.

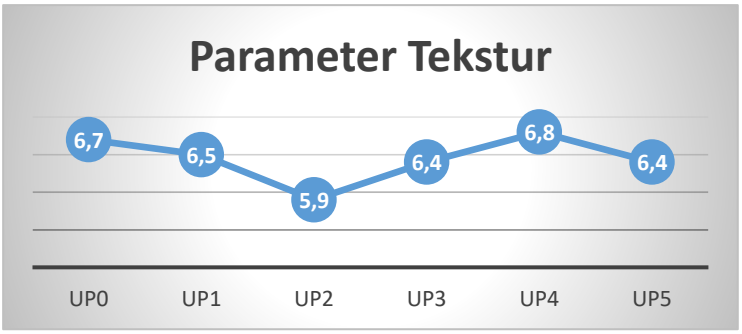

Figure 4. Texture Parameter Diagram

Conclusion

This research provides valuable data for further research regarding making shrimp pudding made from a mixture of vanamei shrimp powder divided into four groups: UP0 (0 gr), UP1 (10 gr), UP2 (20 gr), UP3 (30 gr), UP4 (40 gr), UP5 (50 gr). liking test with 60 panelists. This research design will implement a completely randomized design (CRD) with 4 repetitions. To analyze the data, the ANOVA statistical test was carried out, namely the influence of the addition of dried rebon shrimp on the organoleptic test with 4 parameters of color, aroma, texture and taste which were liked and accepted by the 60 panelists, namely the UP4 treatment (addition of 40 grams of vanamei shrimp powder).

References

Bawinto, A. (2015). Analisa Kadar Air, pH, Organoleptik, dan Kapang pada Produk Ikan Tuna (Thunnus Sp) Asap, di Kelurahan Girian Bawah, Kota Bitung, Sulawesi Utara. Jurnal Media Teknologi Hasil Pertanian, 3(2), 55-65.

Danesh Pajooh, A. M., & Mohammadi, Z. (2024). Facilitated Method for Production of Chitin and Chitosan from Shrimp Shells. Caspian Journal of Engineering Modern Technologies, 1(1), 7-13.

Guerrero-Rodríguez, B., Jamett, A., Layana, L., Berrezuela-Palacios, C., Cortez-Gómez, S., Briceño, S., & Lobos, J. (2021). Graphene functionalized with partially deacetylated chitin extracted from shrimp shell waste. Acta Microscópica, 30(2), 1-12.

Hasdar, M., Rahmawati, Y. D., Erwanto, Y. & Rusman (2019). Quality Protein, Viscosity, Gel Strength and Structural Morphology of Sheepskin Gelatin Catalyzed HCl With Different Concentrations. In IOP Conference Series: Earth and Environmental Science (Vol. 334, No. 1, p. 012049). IOP Publishing.

Hasdar, M., Wadli, W., & Meilani, D. (2021). Rancangan Acak Lengkap dan Rancangan Acak Kelompok pada pH Gelatin Kulit Domba Dengan Pretreatment Larutan NaOH. Journal of Technology and Food Processing (JTFP), 1(01), 17-23.

Irfan A.M & Lestari N. (2022). "Pemodelan Matematis Kinetika Pengeringan Cabai Merah Dengan Perlakuan Blansing Suhu Rendah." *Jurnal Ilmiah Rekayasa Pertanian dan Biosistem* 10(1),98-1: 18.

Liu, J., Yang, X., Liu, H., Jia, X., & Bao, Y. (2021). Mixed biochar obtained by the co-pyrolysis of shrimp shell with corn straw: Co-pyrolysis characteristics and its adsorption capability. Chemosphere, 282, 131116.

Maryam & Andi. (2023). "Analisis Kimia Dan Organoleptik Bubuk Penyedap Rasa Berbasis Limbah Udang Sebagai Alternatif Penyedap Alami." *Jurnal Agroindustri Pangan* 2(2): 68–85.

Milati, Sinata. Z, & Mahmudiono.T. (2022). "Literatur Review : Gambaran Cemaran Logam Berat Pada Udang Di Indonesia Literature Review: Overview of Heavy Metal Contamination of Shrimp in Indonesia."

Murali, S., Delfiya, D. A., Kumar, K. S., Kumar, L. R., Nilavan, S. E., Amulya, P. R., Krishnan, V.S., Alfiya, P.V., & Samuel, M. P. (2021). Mathematical modeling of drying kinetics and quality characteristics of shrimps dried under a solar–LPG hybrid dryer. Journal of Aquatic Food Product Technology, 30(5), 561-578.

Mursyid, Indriyani, & Herlanda.O. (2022). "Perbedaan Karakteristik Tepung Umbi Suweg (Amorphophallus Campanulatus) Berdasarkan Suhu Dan Waktu Steam Blanching." 7(6): 5693–5703.

Muslimin, I., Syahrul., & Metusalach. (2022). Effect of Preparation Treatments on the Physico-Chemical Characteristics of Nile Tilapia (Oreochromis niloticus) Protein Concentrate. International Journal of Environment, Agriculture and Biotechnology, 7 (1), 61-67.

Ningsih, I. Y. (2018). Pengembangan Produk Penyedap Rasa dan Tepung Jamur Tiram di Desa Dawuhan dan Kelurahan Dabasah Kabupaten Bondowoso. Warta Pengabdian, 12(3), 307.

Pagarra, Halifah, Hartati, Wardhana, M.I., & Sahribulan. (2022). "Olahan Bumbu Bubuk Kaldu Jamur Tiram Di Desa Sokkolia Kecamatan Bontomarannu Kabupaten Gowa." *Sasambo: Jurnal Abdimas (Journal of Community Service)* 4(4): 681–89.

Pramudya, P.A., Fahmi, A.S., & Rianingsiih.L. (2022). "Optimasi Suhu Dan Waktu Pengeringan Nori Berbahan Baku Ulva Lactuca Dan Gelidium Sp. Dengan Penambahan Perisa Bubuk Kepala Udang Menggunakan Response Surface Methodology." *Jurnal*

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Rahayu, A. P., Islami, A. F., Saputra, E., Sulmartiwi, L., Rahmah, A. U., & Kurnia, K. A. (2022). The impact of the different types of acid solution on the extraction and adsorption performance of chitin from shrimp shell waste. International Journal of Biological Macromolecules, 194, 843-850.

Safithri, Mega, Tarman, K., Suptijah,P & Widowati, N. (2019). "Karakteristik Fisikokimia Kolagen Larut Asam Dari Kulit Ikan." 22.

Saputra, D. D., & Mursyid, M. (2023). The Effect of Acetic Acid Concentration on the Physicochemical Properties of Shrimp Shell Powder (Fenneropenaeus Merguiensis de Man): Shrimp shell powder. Journal of BiGME, 3(1), 36-44.

Sintya., Maryam, A., & Hamdi. (2023). Analisis Kimia dan Organoleptik Bubuk Penyedap Rasa Berbasis Limbah Udang (Fenneropenaeus merguiensis) Sebagai Alternatif Penyedap Alami. Jurnal Agroindustri Pangan, 2(2), 68-85.