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"REVIEW ARTICLES; UTILIZATION OF *PINDANG* PROCESSING LIQUID WASTE FOR FLAVOR"

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ABSTRACT

This article aims to examine the process of processing *pindang* liquid waste into flavor powder and its quality. The processing of *pindang* liquid waste into flavor powder consists of the stages of filtering, boiling, and mixing with spices, drying, and flouring. The quality of the flavor powder obtained included water content of 5.69±0.64%; protein content of 16.54±0.1%, and amino acids 125,624.26 mg/kg, and the results of the solubility test were 76.16±3.28%.

Keywords: quality, drying, flouring, protein, amino acids.

INTRODUCTION

Pemindangan is fish processing that uses salting and heating techniques. The traditional method of *pemindangan* consists of dry-salting and wet-salting. The process of processing *pindang* fish will provide by-products in the form of waste, especially liquid waste generated from the washing and boiling process of fish. Generally, the liquid waste is directly disposed of without any treatment first. The impact causes water pollution and causes a foul odor. Therefore, the handling and or utilization of liquid waste from *pindang* processing is very important to do.

One of the uses of liquid waste from the processing of *pindang* is to be processed into flavor powder or flavoring. Flavoring is a food additive that is often used in food which aims to add flavor or just strengthen the taste of the food. Changes and developments in food from taste to food form are growing. Various kinds of food are present and food manufacturers are competing to produce tasty and delicious food to meet consumer needs. Food seasonings are created to make processed foods more delicious (Juita et al, 2015).

The public's preference for the use of flavoring is very high, although until now some of the flavorings on the market are still controversial, so it is necessary to investigate alternative natural flavorings by utilizing fishery products that contain lots

of glutamic acids. This article aims to examine the process of processing *pindang* liquid waste into flavor powder and its quality.

Waste Utilization Potential

Pemindangan salt or saltwater is very popular in several countries including Indonesia, the Philippines, and Thailand. *Pindang* processing technology is very simple and can be done by various groups of people. The fish is prepared first by removing the contents of the stomach, after that, it is arranged in a container alternately with salt and then cooked. For a faster process, you can boil the water until it boils first, then put the fish and salt in a plastic bag and steam for two hours. After two hours, the excess water can be removed and salt is added to the fish and then steamed again for another two hours. Fish can be removed after steaming and stored at room temperature.

Pindang fish is one of the most popular traditional preparations. In Indonesia, displacement is spread in almost all regions. According to data from the Ministry of Industry of the Republic of Indonesia in 2016, there were more than 105 *pindang* fish processing industries spread across the island of Java and ± 32 industries in Central Java Province, especially in Pati, Rembang and Pekalongan. %, Sumatra Island 15.34%, Bali and Nusa Tenggara Island 12.25%, Sulawesi Island 3.39%, and Kalimantan Island 0.04% (Astawan 2004).

According to data from the Ministry of Maritime Affairs and Fisheries in 2013, the production of *pindang* fish in Indonesia reached 253,600 tons, where this production is predicted to continue to increase every year. This abundant production produces waste in the form of liquid leftover from fish stew, which is mostly solid in the form of unsaturated fat.

Pemindangan process will produce waste in the form of liquid, brownish in color, with a distinctive aroma of *pindang* fish and containing cloudy deposits for petis, shrimp paste, and fertilizer ingredients (Danitasari, 2010). Liquid waste from cooking and draining which is usually used for fish sauce, fish paste, and flavours. Waste produced by the fishing industry includes protein, dissolved carbohydrates, meat flakes, and other components lost during boiling (Morita et.al 2002). According to the Ministry of Environment in Murniati (2007), liquid waste from *pindang* contains a fairly high nutritional value that can be used for food and feed by making protein concentrate products.

The content of *pindang* liquid waste

Boiling water in the processing is liquid waste from the fishery industry which contains various interesting flavor components to be utilized in order to reduce waste on the cost of recovering a polluted environment. The liquid waste from the fishery industry, especially the boiled water of *pindang*, contains a lot of protein and fat, thus

increasing the concentration of BODS and TTS which is quite high. The levels of BODS and TTS depend on the level of production, the type of raw material, freshness, and the fish originating from the final product (Niamnuy et.al 2007).

The components contained in the amino acids of wastewater in *pindang* are threonine 3.09 g/kg, glycine 7.12 g/kg, valine 2.70 g/kg, methionine 2.83 g/kg, isoleucine 4.60 g/kg, Leucine 9.40 g/kg, Phenylalanine 3.70 g/kg, Lysine 10.60 g/kg, Histidine 1.40 g/kg, Arginine 5.80 g/kg (Brogstrom 1995).

The liquid waste generated from the remaining boiling has nutritional content, namely protein content of 13.22%, fat content of 2.10%, ash content of 2.60%, water content of 70.0%, and salt content of 12.08% (Nurwahyunigsih, 2010).

Fats in *pindang* wastewater also contain unsaturated fatty acids such as omega 3 and omega 6 essential fatty acids. Fats produced by fish and their processed products contain unsaturated fatty acids such as omega 3 and omega 6 fatty acids which can be used as feed supplements to improve health, support growth, and improve the quality of livestock products (Strarcevicet al., 2014).

Essential fatty acids are easily oxidized by free radicals that can damage antioxidants produced by the body, such as GSH (Glutathione Peroxidase), Selenium (Se), and vitamin E so that they can cause damage to body tissue cells and interfere with metabolic processes (Rusmana, 2010). 2007). Khamidinal et al. (2007) stated that the content of omega 3 namely EPA and DHA in processed tuna decreased due to the heating process.

In the process of *pemindangan* there is a process of salting and boiling. The salting process serves to provide a savory taste to the fish, lowering the fluid levels in the fish's body, preventing and inhibiting the growth of spoilage bacteria and other organisms. This salting process will affect the fish's boiled water because during the boiling process the liquid in the container will continue to increase due to the release of fluid in the fish's body so that the cooking water indirectly mixes with salt (Hognadottir 1999).

Salt is an important factor in salting. Ca and Mg components found in salt cause fish to become hygroscopic, MgCl2 or MgSO4 components produce a slightly bitter taste in the fish cooking water, while Fe and Cu elements can cause fish and boiled water to be dirty brown or yellow (Morita et.al 2001)

Method of processing *pindang* liquid waste into flavor powder

According to Meiyani et al., (2014), fish boiled water, *pindang* liquid waste is filtered to remove impurities in the form of solids or fish flakes. Then the filtered water, namely fish stock, is heated to 80°C. When heating it is added with onion, garlic, salt, sugar, pepper, and 2.5% cornstarch. After that, the flavoring mixture is poured into a tin and flattened thinly, then in the oven at 70°C until the dough becomes dry and

crispy. After drying, mashed using a blender and then sifted to produce a smooth flavoring.

Product Characteristics

The results of research conducted by Tamaya et al. (2020) showed that the content contained in the flavoring of *pindang* liquid waste was at a water content of 5.69±0.64%; protein content of 16.54±0.1%; and amino acids 125,624.26 mg/kg and the results of the solubility test were 76.16±3.28%.

The flavor enhancer from the *pindang* process with high saltwater, which functions as a preservative or inhibits the growth of spoilage microbes and increases the osmotic pressure of the medium (Winarno 1982 in Danitasari, 2010). The savory taste in the flavor comes from two main components, namely peptides and amino acids found in fish or shrimp extracts as well as from the components of the spices used. The amino acid glutamate in fish extract is the most dominant amino acid determining the savory taste. The nature of the glutamic acid present in fish, shrimp, or meat extracts is the same as the glutamic acid found in monosodium glutamate (MSG) in the form of flavoring powder (Astawan 2004).

Product Market Segmentation

OGLA is an example of a flavoring product that comes from liquid waste from *pindang* fish. OGLA (Organic Glutamic Acid) is present as a brand of the first natural flavoring product in Indonesia, from *pindang* fish extract. OGLA is a natural flavoring as an alternative to MSG that is able to meet consumer needs for safe, healthy, and nutritious flavorings. The OGLA flavoring business has partnered with 5 cooking businesses, 4 food processing business partners, and 2 resellers. The selling price of OGLA sizes 10 g, 25 g, and 80 g is Rp. 3,000, Rp. 7,500 and Rp. 20,000 while the BEP price is Rp. 2,465, Rp. 3,338 and Rp. 8,531 and BEP units of 434 units, 321 units, and 125 units, respectively. Product sales for 5 months have reached 2,791 units with a turnover of Rp. 14,998.

Product Use

Fats in *pindang* wastewater also contain unsaturated fatty acids such as omega 3 and omega 6 essential fatty acids. Fats produced by fish and their processed products contain unsaturated fatty acids such as omega 3 and omega 6 fatty acids which can be used as feed supplements to improve health, support growth, and improve the quality of livestock products (Strarcevicet al., 2014).

Essential fatty acids are easily oxidized by free radicals that can damage antioxidants produced by the body, such as GSH (Glutathione Peroxidase), Selenium (Se), and vitamin E so that they can cause damage to body tissue cells and interfere

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Conclusion

The processing of *pindang* liquid waste into flavor powder consists of the stages of filtering, boiling, and mixing with spices, drying, and flouring. The quality of the flavor powder obtained included water content of 5.69±0.64%; protein content of 16.54±0.1%, and amino acids 125,624.26 mg/kg, and the results of the solubility test were 76.16±3.28%.

REFERENCES

Astawan M. 2004. Petis si Hitam Lezat Bergizi. http://cybertravel.cbn.net.id/cbprtl/cybertravel/main.aspx. [3 Feb 2009].

Borgstrom G. 1989. Fish as Food. Volume II nutrition, samitatition and utilization. Academic press New York san Fransisco, London.

Danitasari, S. M. 2010. Karakterisasi Petis Ikan dari Limbah Cair Hasil Perebusan Ikan Tongkol (*Euthynnus affinis*). Skripsi. Fakultas Perikanan dan Ilmu Kelautan. Bogor: Institut Pertanian Bogor.

Hognadottir A. 1999. Flavour perception and volatile copounds in fish [Tesis]. Departemen of Food Science.

Ilyas S. 1983. Teknologi Refrigerasi Hasil Perikanan. Jakarta: CV. Paripurna.

Juita, N., Lovardi I., dan Linda, L. 2015. Pemanfaatan Tumbuhan Penyedap Rasa Alami pada Masyarakat Jurnal Media Teknologi Hasil Perikanan Vol. 6, No. 2, April 2018 41 Suku Dayak Jangkang Tanjung dan Melayu di Kabupaten Sanggau. Universitas Tanjungpura. Jurnal Media Teknologi Hasil Perikanan

Kementerian Kelautan dan Perikanan. 2015. Database Nilai Gizi. Litbang KKP. Jakarta.

Meiyani. D. N. A. T., Riyadi. P. H., Anggo. A. D. 2014. Pemanfaatan Air Rebusan Kepala Udang Putih (Penaeus merguiensis) Sebagai Flavor Dalam Bentuk Bubuk Dengan Penambahan Maltodekstrin. Jurnal Pengolahan dan Bioteknologi Hasil Perikanan. Vol. 3(2):67-74.

Morita K, Kubota K, Aishima T. 2001. Sensory characteristics and volatile components in aromas of boiled prawns prepared according to Murniati D. 2007.

Pemanfaatan kitosan sebagai koagulan untuk memperoleh kembali protein yang dihasilkan dari limbah cair industry pemindangan ikan. Sekolah Pasca Sarjana Universitas Sumatera Utara.

Murniati, D. 2007. Pemanfaatan Kitosan Sebagai Koagulan Untuk Memperoleh Kembali Protein Yang Dihasilkan Dari Limbah Cair Industri Pemindangan Ikan. Tesis. Sekolah Pasca Sarjana. Magister Teknik Kimia. Medan: Universitas Sumatera Utara.

Niamnuy D, Devahastin S, Soponronarit.2007. Quality change of shrimp during boiling in salt solution. Journal of food science. Vol 72 : 5experimental designs. Jounal of food science Vol 34 pages 473-481.

Noel, F. 2013. Limbah PT. Indotuna Jadi Petis Ikan. Tribun Manado, 12 September http://manado.tribunnews.com/2013/09/12/limbah-pt-indotuna-jadi-petis-ikan, diakses tanggal 11 Nopember 2014).

Nurwahyuningsih, V. 2010. Pemanfaatan Air Rebusan Ikan Tongkol (Euthynnus affis) Sebagai Bahan Pembuatan Kerupuk. Institut Pertanian Bogor.

Nuryani H & Jinap S. 2010. Soy Sauce and Its Umami Taste: A Link From the Past. Nuryani H & Kensaku T. 2006. Evaluationof Peptide Contribution to the IntenseUmami Taste of Japanese Soy Sauces. Journal of Food Science 71(3): 277-283.

Oktavia, D. A. dkk. 2012. Pengolahan Limbah Cair Perikanan Menggunakan Konsorsium Mikroba Indigenous Proteolitik dan Lipolitik. Agrointek, 6(2): 65- 71.

Prasetya, Bagas dkk. 2019. Bisnis Penyedap Rasa dari Ekstrak Pindang *Decapterus russelli* sebagai Alternatif Monosodium Glutamat. Program Studi Teknologi Hasil Perikanan, Fakultas Perikanan dan Ilmu Kelautan, Universitas Brawijaya

Rodriguez-Jerez JJ, Mora-Ventura MT, Lopez-Sabater EI, dan Hernandez-Herrero M. 1994. Hystidine, lysine and ornithin decarboxylase bacteria in spanish salted preserved in Anchovies. J Food Protection 57: 784-787,791.

Sabri , E, Supriharti, D & Gunawan E, U. 2006. Efek pemberian monosodium glutamate (MSG) terhadap perkembangan embriomencit (Mus musculus L.) strain DDW selama periode pra implantasi hingga organogenesis, Jurnal Biologi Sumatera, vol. 1, no. 1, hal. 8-14.

Starcevic, K., T Masek, D. Brozic, N. Filipovic dan Z. Stojevic. 2014. Growth performance, serum lipids and fatty acid profile of different tissues in chicken broilers fed a diet supplemented with linseed oil during a prolonged fattening period. J. Veterinarski Arhiv. 84 (1): 75-84.

Tamaya, Aryna Conny. dkk. 2020. Karakteristik Penyedap Rasa dari Sir Rebusan Pada Jenis Ikan yang berbeda dengan Penambahan tepung Maizena. Jurnal Ilmu

dan Teknologi Perikanan Volume 2 No 2. Program Studi Teknologi Hasil Perikanan, Fakultas Perikanan dan Ilmu Kelautan, Universitas Diponegoro.

Wijatmoko A. 2004. Pemanfaatan asam-asam organik (asam cuka, jeruk nipis (*Citrus aurantifolia*) dan belimbing wuluh (*Averrhoa bilimbi*)) untuk mengurangi bau amis petis ikan layang (*Decapterus spp*.). [skripsi]. Bogor: Departemen Teknologi Hasil Perairan, Fakultas Perikanan dan Ilmu Kelautan, Institut Pertanian Bogor.

Winarno, F.G. 2007. Teknologi Pangan. Mbrio-Press. Bogor.