The Study of Quality Organoleptik and Microbiology Anchovies Dry in Toniku Village West Halmahera North Maluku Province, Indonesia

Ahmad Talib, Farid Dunga, Sitkun Deni
1 Fisheries Product Technology, Muhammadiyah University North Maluku, Indonesia, 2 Fisheries Product Technology, Muhammadiyah University North Maluku, Indonesia, 3 Fisheries Product Technology, Muhammadiyah University North Maluku, Indonesia

Email: madoks75@yahoo.co.id

Abstract. Organoleptik is testing on old passion for food and a willingness to use a product by test the senses or sensory test on either earnings a product. While test microbiology is one of the criteria for the quality of food and the safety of are often practiced to meet various criteria microbiology food an ingredient. The purpose of this study is to find value organoleptik quality and microbiology anchovies dry produced by the rural communities Halmahera Toniku district west. The methodology that was used consists of two phases, pt pgn promised to supply the sample collection also the preparation of the tools and materials. The second phase is testing stage organoleptik with the methods and microbiology is the hedonic with the total plates. The results of the study organoleptik shows that an attribute, the visibility of the of flavor of odor and the consistency of with a value of up range (7-8). While product quality testing microbiology alt on storage one month with a total value microbes belong to (2,6 x 10^4), storage it fell apart two months (4,3x10^4), storage three months (5,6x10^4), while the E. coli and Salmonella the results of his testing are negative with the (there is no bacteria).

Keywords: Toniku west village Halmahera North Maluku, study organoleptik quality, microbiology anchovies dry

I. Introduction

The Potential resources (standing fish stocks) contained in waters Morth Maluku estimated 694,382.48 tons of potential sustainable that can be used a maximum sustainable yield (MSY) 347,191.24 tons of/year. Comprising the small and large pelagic and demersal fish. The big and the small pelagic fish reached 211,590.00 tons/year while demersal fish 135,005.24 tons/year from potential does show that waters North Maluku prospective enough resources to in the governance and used in a sustainable way (Alwi, 2014). West Halmahera situated in the region of the Province of North Maluku. With a total area west halmahera consisting of a single broad the ocean and the land area reached 14,253.66 km², broad the sea 11,253.50 km², the land area 3,108,16 km². The production of ocean fisheries west halmahera for this year is 76,261.41 tons consisting of a kind of large pelagic 46,124.34 tons, small pelagic 18,909,86 tons, and demersal 11,227.21 tons (West Halmahera Marine Fisheries Agency, 2013). One of the district west halmahera that has the potential resources small pelagic fish located on
the gulf dodinga, where fishing activities get anchovies developing well as well as one centers of production anchovies dry in North Maluku

Many fishes processed because they have the importance of the also of that can be used either as fresh fish and fish dry. Processed fish resources of its abundant in indonesia is an opportunity to develop businesses that many have undertaken by traditional processing industry. Processed fish anchovies and dry which is produced the community in village Toniku and North Maluku in general, usually of us have a lasts long 1 until 2 the moon even he or she could hold out more than 3 to two months depending on how to handle this problem a good. The womb nutrition from the food any material will undergo a change during storage caused by the activity of an enzyme and bacteria.

The existence of of microorganisms in food supplies a great deal to do the condition of food supplies anchovies and dry, because of these the majority were microorganisms lawless robber and a destroyer like mildew. The presence of microorganisms pathogenic it was possible to have lowers the quality processed fish that is produced (Volk and Wheeler, 1993 ). See problems that happened to the anchovies dry produced by the rural communities Toniku (Halbar) and lack of information on the quality of anchovies dry good, then required this research

2. Research Methods

The purpose of this study is to find the value of the quality of organoleptik and microbiology processed fish anchovies and dry produced by the community in the village Toniku West Halmahera. As for the benefit of this research is to add scientific information for processing anchovies toniku dry in the village, about the quality of microbiology and organoleptik processed fish anchovies and dry produced by the local community. A sample was obtained from anchovies Jailolo Toniku Village in south West Halmahera District, and carried out an examination of processing anchovies dry by the community, and then will be testing organoleptik in the Laboratory Technology Fisheries Muhammadiyah University North Maluku as for the microbiology Laboratory LPMHP conducted in North Maluku Province.

2.1. Materials and Instrument

The materials used in this research is anchovies (Stelophorus heterolubus), laundering water, butter field phosphat, nutrients to media (PCA), a solution of NaCl dan PDA (potato dekstroze agar). An instrument used is a basin, they believe that the scales, erlenmeyer, a beaker glass, hot plate, stirrer, an autoclave, burnes, plastic sterile, tweeizers, stomacher, a rack test tube, test tube, petridish, biomat, of incubator, pipet, a petri dish and handtally counter. To assay organoleptik use stationery writing and sheets scoresheet.

3. Results and Discussion

3.1. Karakteristik Improvement In The Quality of Organoleptik Anchovy Dry

Testing organoleptik for a food was assessment test used the senses of sight, of taste and odor. This can be seen with the quality of a product or receipt (Soekarto and Hubeis, 2000).4.

3.1.1. Appearance

The visibility is parameter that can be seen visually that causes the panel interested and fond of that product, the visibility of a product food is towing main factors before the panel love of the nature of the quality of the other like a sense of sensory, smell and texture. In general consumers choose food having an apparition withdraw (Soekarto and Hubeis, 2000).4. Organoleptik testing shows and that the value of the assessment results of the visibility of the panel quality control anchovies dry is presented in Figure 1
Figure 3. Charts the visibility organoleptik anchovies dry

Figure 3. Showing that the average the visibility of anchovies dry where to treatment long storage one month with the 8.70 to the specifications (whole, clean, neat, luminous by of the type), then in storage two months with the 7.63 to the specifications (whole, clean, blowzy, luminous by the type of ), in storage three months with the 6.59 to the specifications (whole, clean some what dull). Compared with a standard of organoleptik set by SNI 01-2708-1992 (BSN, 1992 ), the product anchovies dry research results are still according to the standards.

The results of the analysis variety of shows that long storage products to exert an influence very real the first (p>0.05). Further testing shows next BNT (different real smallest), it can be concluded that all three different treatment long storage very real between one with another. The visibility of anchovies dry looked the same for all treatment long storage and there is no physical damage and the absence of a discoloration means, besides a long time storage the longer, make revenue the panel tends to be decline.

The longer do storage and a decline in the visibility. This is because the influence of heat for drying causing the reaction browning (Maillard) between amino acids by reducing sugar and the salt in products. According to Lee (1983), that sugar reducing agent upon fish is the result of the breakdown of glycogen for a moment after of a dead fish. Reaction between an acid amino acids and sugar will form melanoidin reducing agent, a polymer brown that can drive down the value of the visibility of the product.

Browning of also happens because the reaction between a protein, peptides and amino acids with the result even though the decomposition of fats. A reaction maillard is readily occur on three days before groceries that are salt water and water and shall demolish your high of water larger than 20 % (Jay, 1992). The same thing by Indriati et al. (1991) find that reaction browning fish dry in indonesia most of them are products be salinityt 7.70%-16.90% with value activity water (Aw) between 0.70-0.78s. To maintaining quality of the fish dry, things mentioned above should be considered in doing processing.

3.1.2. Odor

The deliciousness of a food is very set by a factor of smell, the odor of be an attraction in themselves determine a sense of anakim large in stature from food products itself (Soekarto and Hubeis 2000). The odor of more frequent contact with panca the sense of smell. In general the odor of received by the nose and the brain more is a mixture of four odor that is the scent, acid, and rancid as often as who 1997). Organoleptik testing shows and that the value of the assessment results of the the panel against smelly fish anchovies and dry can be seen in Figure 2.
Figure 2. A chart value organoleptik smell anchovies dry

Figure 4. Showing that the smell rata-rata anchovies dry to treatment storage months old 1 worth 8.50 to specification (fragrant, specific type, devoid of smell additional), then in storage 2 months with the 7.44 to specification (almost neutral, little whiff additional ) and experienced a fall in storage 3 months with the 6.40 to specification (neutral, little whiff additional). The results of the analysis variety of shows that long dry storage anchovies real influence on the perceived value of smell on the economic of situation (p>0.05). Further testing shows next BNT (different real smallest ), it can be concluded that treatment long storage one month different with the storage of 2 months and three months.

A decline in the value of smell on storage three months, so as to further application will affect the reception of the customers to dry anchovies products that is stored more than four months. During the three months storage, the fall in the value organoleptik the odor of relatively small. It is suspected that this because of a metabolite simple derived from proteins and fats will yielding an odor ammonia, foul, other rancid and odor unwanted. According to Bligh et al., (1988), drying can promote an oxidation and rancidity on taking fat so that it can be lower the value organoleptik smell.

3.1.3. Flavor
A sense of a decisive factor power received the customers to food products. Many are considered to be taste is more use of the senses of taste or tongue. A sense of factors play an important role in the selection of products by the consumer, because even as good nutrition content but it did not to be acceptable to its best customers turn increase nutrition the community did not target can be achieved and it less attractive to consumers (Winarno 1997). The testing organoleptik and value of the panel the scores against the anchovies dry is presented in Figure 3.

Figure 3. A chart value organoleptik taste of fish anchovies dry

The assessment results of the the panel against taste of fish anchovies and dry during storage shows that on average the value of 7.67-6.60 obtained was that. The score 7 on judgment organoleptik flavored with specification is was out of this world, specific of types, additional without taste. Compared to a standard of value organoleptik set by SNI 01-2708-1992 (BSN, 1992), anchovies
products dry the result of this research is still in line with a standard. The results of the analysis variety of shows that long storage anchovies dry of 1 month, 2 months and 3 months as a whole real influences.

The next test further BNT (different real smallest), concluded that treatment storage third old different very real between treatment with each other at standard (p>0,05) on reductions in the value of anchovies dry produced. During both the first storage of the moon to the month of 3rd the fall in the value do not think so too it is evident that there for all treatment. This is because the amount of bacteria relatively small so they also a few compound macromolecules once the scene of destruction and it did not quite affecting the flavor of anchovies dry produced products. Investigators Sedjati (2006), that component full-flavored in anchovies dry also influenced by events reshuffle compound macromolecules yield substances undesirable in food.

3.1.4. Consistency
Consistency is a component and the structure set and merged into micro and makrostruktur in terms of the flow of deformation. Consistency an ingredient depends on the circumstances of physical material so the an assessment of consistency can be violence, kerenyahan and elasticity (Thalib, 2008). Consistency a foods connected with water content in the foodstuffs. The less content of the water and food to be more fragile (Winarno, 1991). The testing organoleptik and value of the panel the scores of consistency anchovies dry is presented in Figure 4.

The assessment results of the the panel against the consistency of anchovies dry during storage shows that on average the value of 8.60-7.70 obtained was that. The score 8.60 on judgment organoleptik consistency to the specifications are solid, compact, pliable, it is dry enough. Compared to a standard of value organoleptik set by SNI 01-2708-1992 (BSN, 1992), anchovies products dry the result of this research is still in line with a standard. The results of the analysis variety of shows that long storage anchovies dry of 1 month, 2 months and 3 months as a whole impacts in the value of the consistency. Further testing shows bnt next, it can be concluded that all three different treatment long storage very real between treatment one with another at the economic of situation (p>0,05) on the perceived value of the consistency of anchovies dry resulting.

The average score shows that, assessment the panel almost equal and range value that is not too far for each treatment. Although such appraisal the panel tended to decline with the long do storage. The water level of which the lower is occurred because of the increased salt contained in of their supplies of fish anchovies, the level of packaging and long drying so that the product into a solid and compact and have an impact on the level of the reception of the panel on the perceived value of the consistency of anchovies dry resulting. This is in accordance according to Rahman (2007), that muscle and cells will put a girdle around fish for water content in the body of fish after doing drying and the process of
dehydration osmosis. The escape of the water because salt is osmotic resulting in texture of fish to dense and compact.

3.2. Characteristic of microorganisms anchovies dry

3.2.1. The results of testing ALT

Anchovies protein content that is relatively high (16%) and she waters reached to 80% will cause anchovies easily broken. In traditional processing in general, the manner of processing that less hygienic and sanitary, and stowage in the state of being not protected/packed with good on condition of the tropics, resulting in the product anchovies dry very fragile to destruction microbiologist (Sedjati, 2006). The results of the testing the value of a plate of total of the anchovies dry can be seen in Table 1.

| No  | Treatment       | Value         |
|-----|----------------|---------------|
| 1   | Storage 1 month| 2.6 x 10^4    |
| 2   | Storage 2 month| 4.3 x 10^4    |
| 3   | Storage 3 month| 5.6 x 10^4    |

Table 1. Shows that the total amount of a plate of the number for the total anchovies dry storage on 3 month with value 5.6 x 10^4 Cfu/g, 2 months in storage namely 4.3 x 10^4 Cfu/g, while the lowest score in storage one month namely 2.6 x 10^4. The results of the analysis the total number plate total anchovies dry. There was a rise in microbes in line with the length of the age of save the product. It is suspected that this because influenced by several factors, such as the influence of the temperature, the raw material before it is processed, processing and handling while conducting a process of drying that is less sanitary so that contamination microbes with the type of neighborhood that do drying. According to Kurosawa (2003), that the process of storage at room temperature very expedite the growth microorganisms where most of microorganisms expected to grow well at a temperature of optimum position 30°C until 37°C. At this stage microbes just did adaptation fits the surroundings perfectly (faselag). According to Supardi and Sukamto (1999), faselag or phase adaptation is a phase that microorganisms has not yet commenced cleavage, but the volume, the synthesis of an enzyme, proteins and the increase in activity of metabolism.

The number of that exceed standards set may result in the occurrence the risks of and poisoning for mankind (Berhimpon, 1993). See the result from the study, product gdp anchovies keringhasil research with long storage 3 months is still could be accepted by consumers or consumed by the human body. Anonymous (2014) that the fish and shrimp processing can still consumed was to have the number of bacteria 10^6-10^7 sel/g and Indonesia national standard (SNI 01-2718-2006), where maximum limit alt for products anchovies is 10^5-10^6 Cfu/g.

3.2.2. The Results of Testing And Salmonella E Coli
The testing E Coli and salmonella to the anchovies dry seen in Table 4 following

| No  | E Coli  | Salmonella |
|-----|---------|------------|
| 1   | Negatif | Negatif    |
| 2   | Negatif | Negatif    |
| 3   | Negatif | Negatif    |
| 4   | Negatif | Negatif    |
Table 4. Shows that the analysis e coli and salmonela is negative and consequently accepted and in accordance with national standard Indonesia and HACCP because it is still under threshold (Negative). This might have been caused several variables always kept in process of handling start to finish that no contamination E Coli bacteria and Salmonella. According to Suwedo (1993), if the water used for handling has undergone kloronisasi or containing certain antibiotics, for example (Otoxytetraacycline), and many bacteria dead in bacteria dangerous as salmonella have also been slain. According Mueljanto (1992), that to keep the quality of fisheries products are good the water used for laundering to free from pollution microorganisms.

Investigators Susianawati (2006) that the existence of influence the use of water and handling equipment used who may also did not come from up impurities environment, because bacteria coliform, E Coli and Salmonella used as an indicator to measure the contamination hygiene equipment and in the process. Bacteria coliform can be found and growing itself as flora equipment processing not really clean, while E. Coli are harder to detect compared with coliform or faecal coliform

4. Conclusion
The research was inconclusive: as follows
1. Product quality testing organoleptik anchovy dry that is produced by the supplier fishermen fish in the Village Toniku quality is still in line with a standard improvement in the quality of organoleptik which have already been stipulated, where is average the value of out of four parameter is the visibility of the (7-8), the odor of (7-8), a sense of (7), the consistency of (8-7).
2. Improvement in the quality of the results of the testing of microbiology as many points right away of a plate of the total on storage 1 of the month with the total microbes belong to (2,6 x 10^4), storage 2 the moon (4,3 x 10^4) and 3 moon therein an (5,6 x 10^4), while the EColi and Salmonela the results of his testing are negative with the (there is no bacteria), this is in accordance with new regulation of SNI (Indonesian National Standard) about the product anchovy dry.

Reference
[1] Adawyah, R. 2007. Pengolahan dan Pengawetan Ikan. Penerbit PT Bumi Aksara. Jakarta.
[2] Dinas Kelautan dan Perikanan Kabupaten Halmahera Barat, 2013. Laporan Tahunan Statistik Perikanan Tangkap.
[3] Volk, WA, MF. Wheeler. 1993. Mikrobiologi Dasar. Jilid I. Edisi kelima. Penerbit Erlangga. Jakarta.
[4] Soekarto, ST, M dan Hubeis. 2000. Metodologi Penelitian Organoleptik. Program Studi Ilmu Pangan. Institut Pertanian Bogor.
[5] Badan Standar Nasional (BSN). 1992 Standar Nasional Indonesia Ikan Teri Asin Kering (SNI 01-2708-1992). Balai Bimbingan dan Pengujuan Mutu Hasil Perikanan, DitjenPerikanan, Jakarta.
[6] Lee, F.A. 1983. Basic Food Chemistry. Second Edition. The AVI Publishing Company, Inc., Connecticut.
[7] Jay, J.M. 1992. Modern Food Microbiology. Fourth Edition. Van Nostrand Reinhold, New York.
[8] Indriati, N., Tazwir dan E.S. Heruwati. 1991. Penyebab Kerusakan pada Ikan Asin, Pengecer dan Grosir di Jakarta, Jurnal Penelitian Pascapanen Perikanan 71: 49-55.
[9] Bligh EG, Shaw SJ, Woyewoda AD. 1988. Effect of drying and smoking on Lipidsof fish. Di dalam: Burt JR, editor. FishSmoking and Drying. New York: Elsevier Science Publishers Ltd.
[10] Winarno. 1997. Dasar Teknologi Pangan. Bogor: Fakultas Teknologi dan Mekanisasi Pertanian, Institut Pertanian Bogor (IPB).
[11] Ahmad Thalib 2008. Pemanfaatan tepung tulang ikan madidihang sebagai sumber kalsium dan fosfor meningkatkan nilai gizi makron kenari [tesis].
[12] Rahman, M. S. 2007. *Food preservation: Overview*. In: Rahman, M. S. (ed.) Handbook of Food Preservation, 2nd ed.: CRC Press.

[13] Sedjati, 2006. Pengaruh konsentrasi khitosan terhadap mutu ikan teri (*Stolephorus Heterolobus*) asin kering selama penyimpanan suhu kamar (Tesis). Program Studi Magister Manajemen Sumberdaya Pantai, Universitas Diponegoro, Semarang.

[14] Kurosawa, A. (2003) *Teknologi Pengolahan Keamanan Pangan*. Bandung: Penerbit Departemen Kelautan dan Perikanan.

[15] Supardi, Sukamto M. 1999. Mikrobiologi dalam Pengolahan dan Keamanan Pangan. Penerbit Alumni. Bandung.

[16] Berhimpon, S. 1993. Mikrobiologi Pangan Ikan Bagian I, Ekologi dan Pertumbuhan Mikroba serta Pertumbuhan Biokimia Pangan. Fakultas Perikanan dan Ilmu Kelautan. Universitas SamRatulangi (Unsrat) Manado.

[17] Anonim, 2014. Mikrobiologi bahan pangan. http://www. Mikrobiologi [Diakses Juli 2015].

[18] Badan Standar Nasional (BSN). *Standar Nasional Indonesia Ikan Teri Asin Kering* (SNI 01-2718-2006). Balai Bimbingan dan Pengujian Mutu Hasil Perikanan, Ditjen Perikanan, Jakarta.

[19] Suwedo, H. 1993. Tehnologi Pengolahan Hasil Perikanan. Liberty. Yogyakarta.

[20] Moeljanto, 1992. Pengolahan dan Pengawetan Hasil Perikanan. Penebar Swadaya. Jakarta.

[21] Susinawati, R. 2006. Kajian penerapan GMP dan SSOP pada produk Ikan asin kering dalam upaya peningkatan Keamanan pangan di kabupaten Kendal (Tesis). Program Studi Magister Manajemen Sumberdaya Pantai, Universitas Diponegoro Semarang.