

## Effect of Traditional Drying To Total Volatile Base-Nitrogen (TVB-N) and Peroxides Numbers on Nike of Payangkah Fish (*Ophiocara Aporos*)

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**Summary:** The research entitled *Effect of Traditional Drying toward Total Volatile Base-Nitrogen (TVB-N) and Peroxide Value (PV) on Nike of Payangkah fish (Ophiocara aporos)* have been done. The research objective is to analyze TVB and NPV content of dry and fresh Nike of Payangkah fish (*Ophiocara aporos*). The drying method was done traditionally under sun rays for 8 hours, TVB-N analysis using distillation method and peroxide value as described by Pearson (1981). The results shows that fresh and dry nike of fish payangkah (*Ophiocara aporos*) each have PV and TVB-N content under value figure recommended.

**Keywords:** Nike of Payangkah fish (*Ophiocara aporos*); fresh; dry; peroxide value, TVB-N

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### I. Introduction

Fish is source of protein, vitamins, minerals and omega-3 fatty acid which is main nutrients for brain development (Spencer et al., 1971). However, fish is also food ingredients broken easily. To cope with the problem it is required a way of processing that can maintain the durable of fish without reducing nutrient value maximally. Information about handling, processing and storage techniques including temperature are very important because can affect the product freshness and quality. In North Sulawesi, especially in Danau Tondano there fish typical namely fish Payangkah fish (*Ophiocara aporos*), which is easy to breed and high adaptability so that it is supporting its abundance. Nike of Payangkah fish (*Ophiocara aporos*) is small size of the adult Payangkah fish whose the diets pattern are different so their chemical composition is also different. Nike of Payangkah fish is presented together with others typical food as complementary. According Lagler, et al., (1977) the nature and nutrient content in the most species of fish depends on their type of food and habits that have a considerable influence on nutritional composition of the fish itself.

Total volatile bases (TVB) is an important characteristic for testing the sea product quality sea and as the most common chemical indicator from decay fish (Amegovu et al., 2012, Wu and Bechtel, 2008). Total volatile bases (TVB) is a group of biogenic amines formed on non fermented food product for storage (Horsfall et al., 2006). According (Huss, 1994) TVB can increased for storage because of some autolysis reaction and deamination.

The research objective is to analyze TVB and PV content on dry and fresh Nike of Payangkah fish.

### II. Material And Methods

Nike of Payangkah fish (*Ophiocara aporos*) was taken from the Tondano Lake of North Sulawesi. Preparation techniques was conducted includes receipts, washing, selection other than fish that are follow-up materials (impurities) are removed. The preparation process of sample is conducted with considering to equipment sanitation and hygienity. The Sample then divided into two section, the one dried below sun rays for 8 hours and others part without dried under sun rays, ready for analyzed.

The peroxide value analysis using a method described by Pearson (1981). It expressed as equivalent ml Peroxide in each 1000 g. TVBN analysis is conducted in extraction phase, distillation, titration. Determination of total volatile nitrogen base (TVBN) is expressed as TVB-N mg/100g sample. The analysis was conducted by repeating three times.

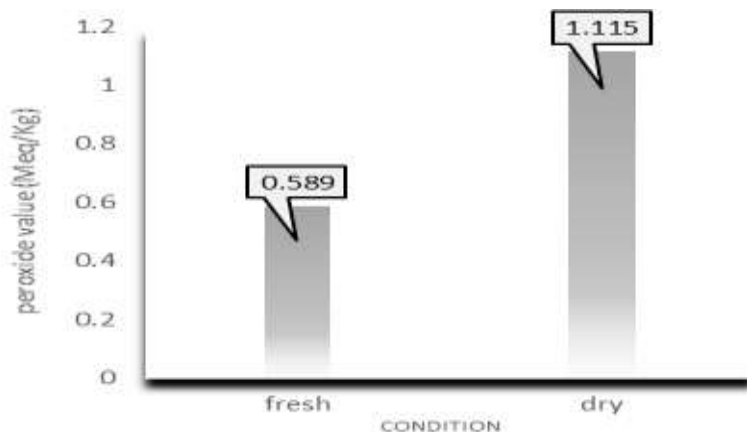
### III. Results And Discussion

The peroxide value measurements are basically measuring the peroxides and hydroperoxides contents are formed in the early stages reaction of fat oxidation. The measurements results on peroxide value indicate an increasing trend after drying process. The analysis result of peroxide value and Total Volatile Base of dry and fresh samples are presented in Table 1.

**Table 1.** Mean of Peroxide value and TVB Nike of dry and fresh samples Payangkah Fish (*Ophiocara aporos*) .

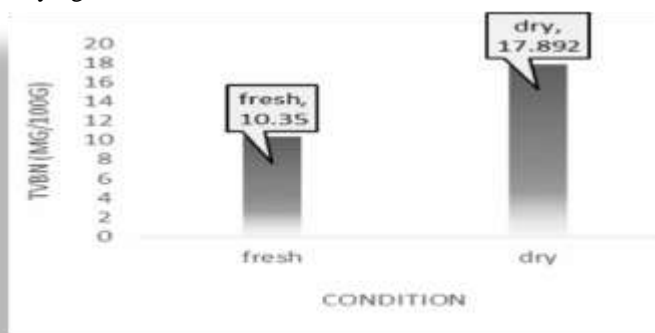
Parameters	fresh	dry
peroxide value (PV) (meq/kg)	0.589	1.115
Total volatil Base (TVB) (mg/100g)	10.350	17.892

From these research results the peroxide value either in dry and fresh sample shows a relatively low value although there was an increase of fresh samples (0.589 meq/kg) and dry sample (1.115 mg/100g). According to Alyas *et al.* (2006) in his research stated the existence of increasing a significant peroxide value with increasing temperature. This suggests a synergistic effect of high temperature toward peroxide value.



**Figure 1.** Mean of Peroxide value on Nike of dried and fresh samples of Payangkah fish (*Ophiocara aporos*)

A high peroxide value indicates the fat or oil has undergone oxidation, otherwise in the lower value does not necessarily indicate still early oxidation conditions. A low peroxide value could be due to the rate of new peroxide formation, smaller than the rate of its degradation into other compounds given the peroxide content quick to degradation and react with other substances (Raharjo, 2008). The fat oxidation by oxygen occurs spontaneously if fatty materials are left to contact with air while the rate of its oxidation process depends on the type of fat and storage conditions (Ketaren, 1986). According deMan (1999) each increasing 10 C in temperatures the rate of oxidation increase doubled. Peroxide is formed in the initiation stage of oxidation. In this stage the hydrogen is taken from other compounds generating free radicals. The existence of rays and metal play a role in process of taking the hydrogen. The free radicals which is formed react with oxygen to form peroxy radical, then can take hydrogen from other unsaturated molecules to produce a new peroxides and free radicals (deMan, 1999; Ericson, 2002). Peroxides can accelerate the process of the appearance of rancid odor and unwanted flavor in food material. If total peroxide is more than 100 meq peroxide/kg, then the material/oil will be highly toxic and has unpleasant odor. The increase of peroxide value is indicator that material/oil will smell rancid (Ketaren 1986). Eyo (2001) reported that peroxide value usually at the range 20-40 milliequivalents of oxygen per kilogram of sample (ml per Kg). Decomposition of protein, fat and water speed up the fish decaying



**Figure 2.** Mean of TVBN Nike of dry and fresh Payangkah fish (*Ophiocara aporos*)

Total volatile base (TVB) is one of the most widely used measurement for fish quality and as chemical indicator of decaying the fish (Zhong-Yi *et al.*, 2010). The TVB-N concentration in fresh fish varies between 5 and 20 mg/100g (Muhammet and Sevim, 2007). The quality classification of fish and fish products on the TVB-N contents is “high quality” up to 25 mg/100 g, “good quality” up to 30 mg/100 g, “acceptance limit” up to 35 mg/100 g, and “rotten” above 35 mg/100g (Amegovu *et al.*, 2012; EU/EC, 2008; Gulsun *et al.*, 2009 ; and Huss, 1995). From this research results the nuke of wet or dry Payangkah fish (*Ophiocara aporos*) are still relatively high quality, because their respective content 17.892 mg /100g and 10.35 mg /100 g.

#### IV. Conclusion

The analysis results of parameters, indicates that chemical components of nuke of the payangkah fish (*Ophiocara aporos*) changing the contents after drying process. However, the peroxide value and TVB Nike of Payangkah fish (*Ophiocara aporos*) either on a fresh or dried samples still below the number recommended.

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