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Effect of Brine Concentration on the Nutrient Content and Fatty Acid Profile of Canned Catfish [*Pangasius sutchi* (Fowler, 1937)]

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Abstract

Indonesia has many marine resources, including catfish [*Pangasius sutchi* (Fowler, 1937)]. There are many catfish in Gunungkidul, Yogyakarta, however the current processed catfish product has low shelf life. Therefore, in this research, the value and shelf life of catfish product were increased with canning process, using brine. The purpose of this study was to investigate the effect of different concentration of brine on the nutrient content of canned catfish and identify the fatty acid profile on catfish and canned catfish. Research methodology consist of (i) creating three different brine (1 %; 2 %; 3 %) and water solution (control 0 %), (ii) canning process of catfish, and (iii) analysis of nutrient content and fatty acid profile of the product. The results showed the use of different concentration of brine have effect on ash content and fat content of canned catfish. Content of ash was increased about 1.47 % approximately with the higher concentration of brine. Content of fat catfish was decreased about 30 % approximately with the addition of brine. There are no significant effect of different brine concentration on catfish protein content. Protein content were 59.36 % for control (0 %), 60.85 % for canned catfish with 1 % brine concentration, 59.07 % for canned catfish with 2 % brine concentration, and 61.69 % for canned catfish with 3 % brine concentration. Analysis was conducted three times. The analyse of fatty acid profile showed that it was influenced by canning process and use of the medium (brine). On the fresh catfish, the procentage of poly unsaturated fatty acid was higher than the others. On the canned catfish, the procentage of saturated fatty acid was higher than the others.

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1. Introduction

Indonesia is known as a country rich in marine biodiversity, including the catfish (*Pangasius sutchi*). Catfish has low shelf life and the shelf life can be increased with processing fish by thermal process. Application of heat in the thermal process allows the resulting product ready for consumption (ready to eat) with high shelf life. Thermal processes, one of which is canning as a food preservation and processing technology which is widely used, has a good chance to be applied in diversification of processed fish. Some of the advantages of thermal processes, such as (Hariyadi, 2000):

- formation of texture and flavor that is distinctive and favoured
- loss of some components antinutritional
- increased availability of some nutrients, such as increased digestibility of protein and carbohydrates
- killing microorganisms thus increasing the durability and food safety
- inactive enzymes destroyer, so the quality of the product is more stable during storage

Canning is a method of food preservation in a sealed container (hermetic) and sterilized with heat. This preservation method is the most commonly performed because it is free from decay, and can maintain the nutritional value, taste and appeal. Canning technology is one method of preserving food by means of heating at high temperatures. Preservation process occurs due to spoilage and pathogenic microorganisms murder by heat. Canning process consists of the following stages (Winarno, 1994):

- Preparation of materials

Preparation materials is done with the selection of materials that will be canned, washing, cutting into certain parts, and preparation of materials for further processing . Wash aims to separate the material from unwanted foreign matter, such as dirt, oil, soil, and so on , and is expected to reduce the number of microbes that are very useful early in the effectiveness of the sterilization process.

- Blanching process

Blanching is a warming introduction that aims to eliminate air in the network, reducing the number of microbes, facilitate filling the cans, soften material, and inactivate enzymes. Blanchng raw materials is usually carried out by soaking in water temperature of 190 °F to 210 °F (87.5 °C to 98.5°C) or with steam.

- Filling into cans

Filling process should be uniform material with a view to maintain uniformity of the air cavity (head space), obtaining consistent product, and keep the weight off permanently materials.

- Exhausting

This stage is to remove the air contained in the pack so that the pressure inside the tin is reduced during the heating process. Exhausting process is done by heating the material in cans using hot steam.

- Sterilization process

Sterilization is a process that is widely used in food preservation. Sterilization temperature and time varies depending on the resistance of a material that is packaged to heat, pH of the solution, and the type of packaging used.

The process of canning using the heating temperature and time can affect the nutrient content and fatty acid profile of the final product. The medium that used in canning process also can effect the nutrient content and fatty acid profile of the final product (Sengor et al., 2008). Many research about canned catfish has been done. Naban (2011) reported about canned catfish using curry as the medium. This study aimed to determine the effect of brine concentration on the nutrient content of canned catfish [*Pangasius sutchi* (Fowler, 1937)] and identify the fatty acid profile on catfish and canned catfish.

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