

**DETERMINATION OF Ca, Mg, Cu, Fe, Pb and Cd IN FERMENTED FISH
PRODUCTS BY ATOMIC ABSORPTION SPECTROMETRY**

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ABSTRACT

DETERMINATION OF Ca, Mg, Cu, Fe, Pb and Cd IN FERMENTED FISH PRODUCTS BY ATOMIC ABSORPTION SPECTROMETRY

Fermented fish products like budu and cinalok are produced from aquatic life. Budu is made from small fish while cinalok is made from shrimp. Although aquatic lives are good protein sources, but the excess intake of budu and cinalok may give negative health effect to consumers. It is because, there is probability for the sources of fish and shrimp exposed to water pollution besides undergo production process that use dangerous ingredients. Elements such as Mg, Ca, Cu, Fe, Pb and Cd may exist in these products. Research on concentration of these metals is done using Atomic Absorption Spectrometry. Before proceed to the metal analysis, budu and cinalok samples were digested by wet digestion process. Two types of samples were prepared for this process which was semi solid samples and freeze dried samples. The amount of Ca, Mg, Cu and Fe in freeze dried budu was 0.779, 2.945, 0.018 and 0.156 mg/g respectively while in semi solid budu was 0.186, 1.128, 0.008 and 0.027 mg/g respectively. The amount of Ca, Mg, Cu and Fe in freeze dried cinalok was 5.693, 5.636, 0.017 and 0.061 mg/g respectively while in semi solid cinalok was 1.782, 1.307, 0.005 and 0.019 mg/g respectively. Pb and Cd were not detected in all the samples prepared. The whole metals concentration detected is in range of allowable international standard. Concentration of element in all freeze dried samples show significant difference compared to the semi solid samples. Sample of budu and cinalok in freeze dried form showed higher concentration of metal detected. Freeze drying process give better result compared to the semi solid samples which was untreated. This result shows that budu and cinalok is safe to be eaten and become one of the good Mg and Ca contributors.

CHAPTER 1

INTRODUCTION

1.1 Background

Campbell-Platt (1987) has defined fermented foods as those foods which have been subjected to the action of micro-organisms or enzymes so that desirable biochemical changes cause significant modification to the food. Fermented fish is one of the popular fish products in our country. Traditionally, people used fermentation process to preserve their food from spoilage but nowadays, preservation of foodstuff is common in food industry. There are many modern technologies that have been used to produce higher quality of fermented food products. Some examples of modern fermented food products are brine, beer, wine and cheese.

In Malaysia, fermented fish products can be classified into four categories which are 'ikan pekasam', salted fish, fish paste called 'belacan', semi fluid fish sauce called 'cincalok' and fish sauce that can be represented by 'budu'. Traditionally, preservation of fresh fish is commonly done by salting and followed by sun drying. This prolonged salting allows fermentation to set in and the addition of carbohydrate sources such as palm sugar and cooked rice enhances the flavour or even the taste of the food. Some people especially old generation like to have these fermented fish products in their meals because