

**EFFECTS OF COOKING METHODS TOWARDS
CONCENTRATION OF CALCIUM, COPPER AND NICKEL IN
SALTED FISH**

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ABSTRACT

EFFECTS OF COOKING METHODS TOWARDS CONCENTRATION OF CALCIUM, COPPER AND NICKEL IN SALTED FISH

This experiment was done to compare the concentration of calcium, nickel and copper in different salted fish species using Atomic absorption spectrometry (AAS) and to compare the effect of two cooking methods on the metals' content in these salted fish. Standard solution of 0.2, 0.4, 0.6, 0.8 and 1.0 ppm were prepared to obtain the calibration curve. The correlation coefficients from the calibration curve are 0.982031, 0.969080, and 0.995175 for calcium, copper and nickel respectively. Relative standard deviation (RSD) obtained is below 10%. The results showed the Bulu Ayam salted fish has highest concentration of Calcium and Nickel, while, Kurau has lowest concentration of Calcium and Nickel. Copper concentration for cooked sample species has no significance different except for boiled Gelama. The results also showed all fried samples have higher metals concentration than raw samples. Most of the boiled samples have lower elements concentration than raw samples. However, there are no health risks with respect to the concentrations of copper, nickel and calcium in analyzed salted fish species in this study.

CHAPTER 1

INTRODUCTION

1.1 Background and problem statement

Fish is widely consumed in many parts of the world by humans because it has high protein content, low saturated fat and also contains omega fatty acids known to support good health (Ikem and Egiebor, 2005). Water pollution leads to fish contaminated with toxic metals, from many sources, e.g. industrial and domestic waste water, natural runoff and contributory rivers (Tariq et al., 1991; Arain et al., 2007, 2008). Fish, generally accumulate contaminants from aquatic environments, and have been largely used in food safety studies. Heavy metals discharged into the marine environment can damage both marine species diversity and ecosystems, due to their toxicity and accumulative behavior (Matta et al., 1999; Turkmen et al., 2009). In the sea, pollutants are potentially accumulated in marine organisms and sediments, and subsequently transferred to man through the food chain (Tuzen, 2003). For this reason, determination of chemical quality of aquatic organisms, particularly the contents of heavy metals in fish is extremely important for human health (Dural et al., 2007).

Salted fish is one of the ways to preserve fresh fish in order to prevent them from decaying. Other than preserving the fish with brine, dried fish is also