BIOACCUMULATION OF RADIONUCLIDES AND HEAVYMETALS BY Pomacea canaliculata (APPLE SNAILS) IN KAMPUNG GAJAH DISTRICT

RIFHAN BINTI MOHAMED REDWAN

BACHELOR OF SCIENCE (Hons.) CHEMISTRY
FACULTY OF APPLIED SCIENCES
UNIVERSITI TEKNOLOGI MARA

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ABSTRACT

Bioaccumulation of the radionuclide and heavy metals in the apple snail uptake from the ex-mining lake at Kampung Gajah, Perak.

This study is an effort to initiate the information search on the containing of the radionuclide and heavy metals inside snails, *Pomacea canaliculata* form Kampung Gajah's mines in Perak. The uptakes were taken from four different ex-mining lakes in Kampung Gajah. The samples were obtained every 3 months, first on August 2007, then on November 2007, the third obtained on February 2008 and the last one was on May 2008. The sampling area involved four lakes, from which sample collected, sample preparation from the separating the soft muscle from the shell. Then, the soft muscles, separated from the shells were sufficiently had to be dried to get the accurate result. The dried samples were grinded and sieved by the 212 micrometer sieve. Finally, the fine powders obtained which was of uniform size was then sealed in the vial and irradiated in the reactor TRIGA MARK II at 750 KW at Nuclear Malaysia by using the Nuclear Activation Analysis method. Two irradiation, short and long radiation were being used during the analysis. The elements identified from the short irradiations were V (3.448 ppm), Al (127367.496 ppm), Mn (174.526 ppm) and Cl (0.205ppm). These elements were from the first counting and the elements that have been obtained from the second counting were K(5919.684 ppm) and Na (2665.249 ppm). For long irradiation, the elements identified from the first count were adalah U (1.73303 ppm), Br (0.61626 ppm) and As (31.2323 ppm). The second count for long irradiation, the elements yielded were Yb (178.957 ppm), Th (2350.965 ppm), Cs (14.083 ppm), Sc (1.28143 ppm), Fe (2794.5 ppm) and Sm (228.846 ppm).

CHAPTER 1

INTRODUCTION

1.1 Background

In Malaysia, there are a lot of mines left from the ancient times activities. The Mines and big lake at Putrajaya are the examples of human made of lake and were mines in the ancient time. There have an example of abandon mines like mines at Kampung Gajah, Perak. Kampung Gajah is located on N 4^{o} 15' and E 101^{o} 15' in Perak. This mine is an active mine in the ancient time and because of that there are a lot of radioactive and heavy metals left inside this mine.

Due to the importance of metal elements on human metabolism, their analysis is an important part of public health studies. Some transition metals at trace level in our metabolism system play effective roles for healthy life. Heavy metals normally occur in nature are not harmful, because they are only present in a very small amount. However, if the levels of these metals are elevated, they can show negative effects. Metals like selenium, iron, nickel, copper, zinc and manganese are essential metals since they play an important role in biological systems, whereas aluminum, lead, arsenic, mercury and cadmium are non-essential metals as they are toxic even in trace amount. This essential metals can also produce toxic effects when the metal intake is excessively elevated (Tuzen, & Saylok, 2006)