International Food Research Journal 22(6): 2280-2287 (2015)
Journal homepage: *http://www.ifrj.upm.edu.my*

Assessment of proximate composition and tetrodotoxin content in the muscle of Yellow puffer fish, *Xenopterus naritus* (Richardson 1848) from Sarawak, Malaysia

[1,2]Mohd Nor Azman, A., [1*]Samsur, M., [3]Mohammed, M., [1]Shabdin, M.L. and [1]Fasihuddin, B.A.

[1]Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia
[2]Fisheries Research Institute, 11960 Batu Maung, Penang, Malaysia,
[3]Fisheries Research Institute Sarawak, Bintawa, 93744 Kuching, Sarawak, Malaysia

Article history

Received: 31 January 2015
Received in revised form: 5 May 2015
Accepted: 22 May 2015

Keywords

Proximate composition
Tetrodotoxin
Yellow puffer fish

Abstract

This study is to report the proximate compositions as well as tetrodotoxin (TTX) content in the muscles of yellow puffer fish *Xenopterus naritus* that collected from Kg. Manggut and Kabong, Sarawak. The internal organs of 26 and 20 specimens from Kg. Manggut and Kabong respectively were removed by the local people that had skills and experiences with the preparation of yellow puffer fish. In general, the moisture contents were ranging between 75.2% and 80.6%. *X. naritus* from Kabong showed higher crude protein contents (88.2% dry weight) than the same species from Kg. Manggut (87.9% dry weight) and not significantly different ($p>0.05$). *X. naritus* from Kg. Manggut demonstrated a significantly higher ($p<0.05$) of crude fat contents (0.49% dry weight), crude fibre contents (0.44% dry weight) and ash contents (5.48% dry weight) compared to *X. naritus* from Kabong which were 0.47%, 0.25% and 5.08% dry weight respectively. The TTX content in the muscle of *X. naritus* that prepared by the unskilled person from Kg. Manggut showed significantly higher (65.3 µg/g) ($p<0.05$) than *X. naritus* that prepared by the skilled person from Kabong (6.63 µg/g) and found to be toxic for human consumption (>2 µg/g) based on Japanese regulation as Malaysia does not have the regulatory limits for TTX yet. Nevertheless, it can be consumed safely if prepared in a proper manner. This is the first report to determine the proximate composition from the muscle of yellow puffer fish from Sarawak. The proximate values obtained from this study shows that the yellow puffer fish *X. naritus* are good protein resources. Therefore, it can be considered for human consumption in countries. The information gained from this study indicates the importance removing TTX to ensure the safe consumption of puffer fish.

Introduction

The puffer fish, *Xenopterus naritus* (Richardson, 1848), or Yellow puffer fish (Figure 1) belongs to the family Tetraodontidae. It can be easily identified by the prominent yellowish or golden coloration especially at the lower part of the body and exhibit a torpedo-shaped body. This puffer fish is a migratory species that inhabits the South China Sea and return to the river to spawn. The juvenile inhabit coastal water out to the sea during the non spawning season. It is widely distributed in China, Thailand, Vietnam, Indonesia and Malaysia. According to Gambang and Lim (2004), in Malaysia, yellow puffer fish is abundant only in Sarawak and the fish is found in the coastal waters especially in areas fringing the mangroves particularly along the Batang (River) Saribas in Betong, Sarawak. It is famous amongst the local people and locally known as 'ikan buntal kuning'.

Figure 1. Yellow puffer fish *Xenopterus naritus*

In Malaysia, puffer fishes are easily found and classified as trash fish. They have no market value and not consumed by local people but in Sarawak, yellow puffer fish is considered a delicacy by the local community particularly in Manggut Village area. Due to its good taste, various dishes and products of this fish is processed and prepared. In Sarawak, celebration of the 'Yellow puffer fish Festival' has become a tourist attraction every year in August at

*Corresponding author.
Email: *msamsur@frst.unimas.my*
Tel: +6082-582941; Fax: +6082-583160