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Article

Identification of Fish Species and Toxins Implicated in a Snapper Food Poisoning Event in Sabah, Malaysia, 2017

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Abstract: In the coastal countries of Southeast Asia, fish is a staple diet and certain fish species are food delicacies to local populations or commercially important to individual communities. Although there have been several suspected cases of ciguatera fish poisoning (CFP) in Southeast Asian countries, few have been confirmed by ciguatoxins identification, resulting in limited information for the correct diagnosis of this food-borne disease. In the present study, ciguatoxin-1B (CTX-1B) in red snapper (*Lutjanus bohar*) implicated in a CFP case in Sabah, Malaysia, in December 2017 was determined by single-quadrupole selected ion monitoring (SIM) liquid chromatography/mass spectrometry (LC/MS). Continuous consumption of the toxic fish likely resulted in CFP, even when the toxin concentration in the fish consumed was low. The identification of the fish species was performed using the molecular characterization of the mitochondrial cytochrome c oxidase subunit I gene marker, with a phylogenetic analysis of the genus *Lutjanus*. This is the first report identifying the causative toxin in fish-implicated CFP in Malaysia.

Keywords: ciguatera fish poisoning (CFP); ciguatoxin-1B (CTX-1B); LC/MS; red snapper; Malaysia

Key Contribution: This study is the first to identify CTX-1B in fish implicated in a Malaysian ciguatera poisoning event.

Citation: Dao, H.V.; Uesugi, A.; Uchida, H.; Watanabe, R.; Matsushima, R.; Lim, Z.F.; Jipanin, S.J.; Pham, K.X.; Phan, M.-T.; Leaw, C.P.; et al. Identification of Fish Species and Toxins Implicated in a Snapper Food Poisoning Event in Sabah, Malaysia, 2017. *Toxins* **2021**, *13*, 657. https://doi.org/10.3390/toxins13090657

Received: 10 August 2021
Accepted: 13 September 2021
Published: 15 September 2021

1. Introduction

Ciguatoxins (CTXs) are well-known-marine toxins that can accumulate in various kinds of reef fish and marine invertebrates through the food chain and may cause human poisoning named ciguatera fish poisoning (CFP) by the consumption of contaminated fish [1–3]. In the coastal countries of Southeast Asia, there are extensive tropical and subtropical coral reefs, where ciguatoxic fishes are found [4]. Fish is a staple diet, and certain fish species are food delicacies to local populations or commercially important to individual communities [5–7].

Toxic dinoflagellates associated with CTXs are widely distributed in Malaysian waters [8–10]. Several CFP cases have been reported in Malaysia following the consumption of red snappers [11,12], with no confirmation of the causative toxins due to a lack of fish