

TETRODOTOXIN & REGULATION OF PUFFER FISH AS FOOD IN OTHER JURISDICTIONS

Trade Consultation Forum
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Yellow fin puffer (*Takifugu xanthopterus*)

(Photo: Agriculture, Fisheries and Conservation Department)



Dangers of puffer fish consumption

- Existence of potent marine biotoxin tetrodotoxin (TTX)
- Can be lethal
- No known antidote
- Treatments are supportive only



Why TTX can cause poisoning?

- Block sodium conductance and neurotransmission in skeletal muscles, which results in neurological and gastrointestinal signs after consumption
- No adequate sampling scheme can assure a safe lot since any single fish may contain a lethal dose of toxin.

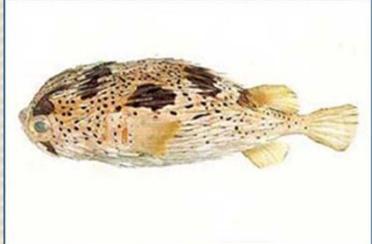


Source of TTX

- Produced by marine bacteria like *Vibrio alginolyticus*
- Accumulates in puffer fish through the consumption of planktons, smaller gastropods, flatworms, starfish that contain TTX
- Toxicity level varies among families and species and also according to different body parts, sex, seasons etc.
- Not all species consumed by humans

What kind of fish may have TTX?

- Fish of order Tetraodontiformes (鮎形目), which include the following families:



- Tetraodontidae (puffer fish),
- Triodontidae (three-toothed puffer),
- Diodontidae (porcupine fish),
- Molidae (ocean sunfish),
- Balistidae (triggerfish),
- Ostraciidae (boxfish) etc.



- Others, including certain goby, starfish, crabs, octopus etc.



Regulation of Puffer Fish as Food

- **Codex Alimentarius**
 - No specific standard or recommendation regarding fish containing TTX
- **Canada**
 - Importation of puffer fish of the family Tetraodontidae is strictly prohibited
- **Mainland China**
 - China FDA prohibited the food trade from processing puffer fish
 - Even though puffer fish is being farmed for export



Regulation of Puffer Fish as Food (2)

- Taiwan

- The authority, based on the food hygiene management regulations, stated that fishermen should not capture or farm puffer fish for supplying for food processing and the catering trade as ingredient.



Regulation of Puffer Fish as Food (3)

- **European Union**
 - Poisonous fish of Tetraodontidae family (i.e. puffer fish), Molidae (i.e. ocean sunfish), Diodontidae (i.e. porcupine fish) and Canthigasteridae (i.e. a sub-family of puffer fish) are not to be placed on the market



Regulation of Puffer Fish as Food (4)

- Japan
 - Regulation of fugu / puffer fish is headed by MHLW and various local health authorities.
 - Prescribed which part of 21 puffer fish species can be consumed.
 - Specific requirements on harvest area for certain puffer fish.
 - Very specific training on handling of fugu and registration requirements for fugu chefs and requirements for fugu restaurants and regulation on farming of puffer fish



Regulation of Puffer Fish as Food (5)

- **New Zealand**
 - Puffer fish and fugu is a "prescribed food" and is monitored for the presence of tetrodotoxin (i.e. presence of tetrodotoxin would result in a failed import and would not be permitted to import into New Zealand).



Regulation of Puffer Fish as Food (6)

- Singapore

- AVA requires since September 2011 a health certificate for all puffer fish or fugu imported.
- Certificate should be issued by relevant government authority of the exporting country, stating that tetrodotoxin in the fish has been removed by a qualified chef and it is fit for human consumption, among other requirements.
- The import of live puffer fish is no longer allowed



Regulation of Puffer Fish as Food (7)

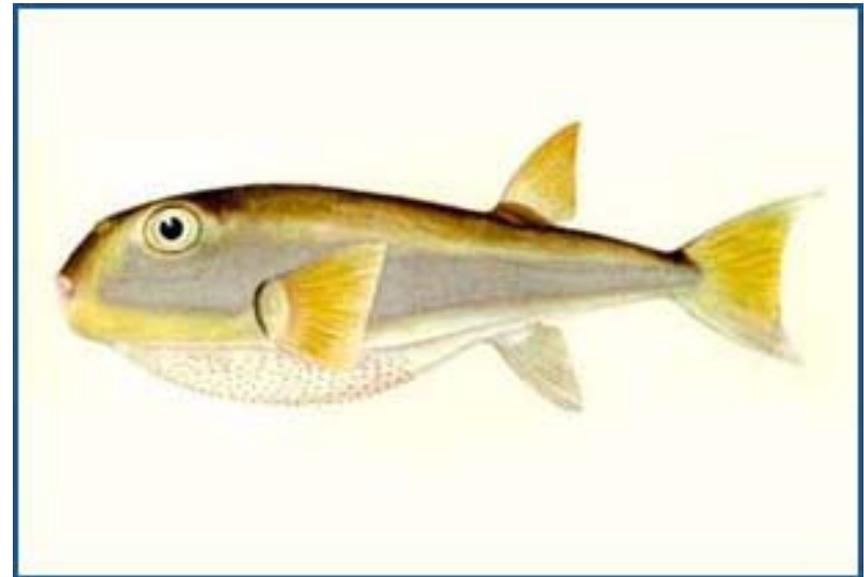
- United States
 - An agreement was made between US Food and Drugs Administration and Ministry of Health and Welfare of Japan
 - Very limited importation (not for general distribution) of Japanese frozen fugu from an organization in Japan where shipments certified safe by officials of the Japanese Government to a sole importer in New York City no more than three times a year.
 - The dressed fish are only distributed to less than 20 member restaurants of a US organization where the chefs had undergone special training to handle the fish.



Local Perspective

- General protection in connection with the sale of unfit food as provided in Cap. 132 stipulate that all food available for sale in Hong Kong must be fit for human consumption
 - Prosecution may be undertaken in puffer fish food poisoning cases

THE END



Brown-backed toadfish / green rough-backed puffer
(*Lagocephalus lunaris*)
(Photo: Agriculture, Fisheries and Conservation
Department)