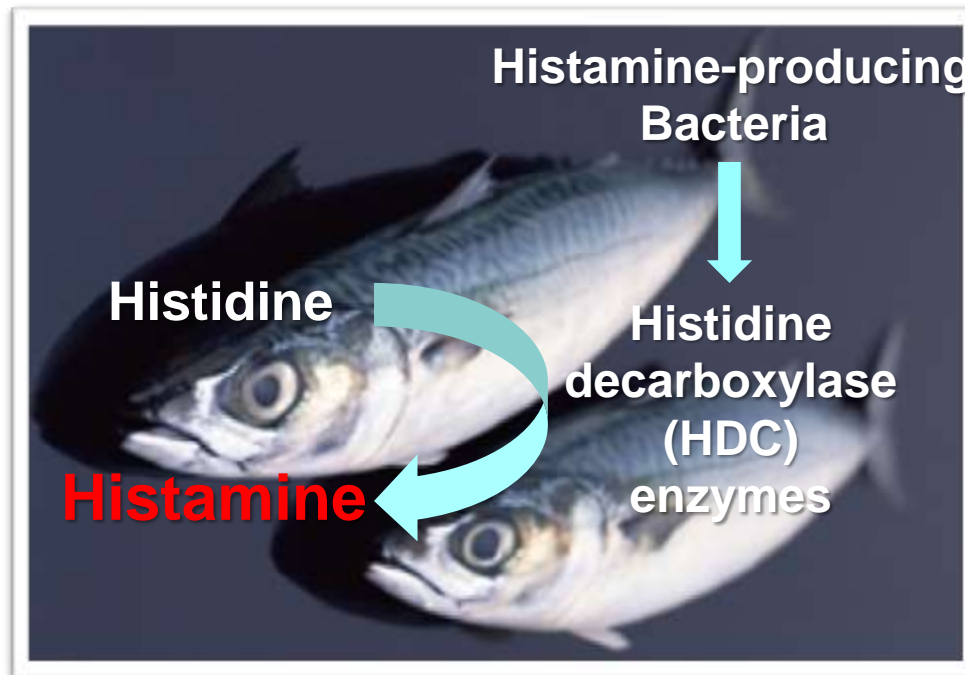


Guidance for histamine control in fish and fish products

67th Meeting of Trade Consultation Forum
14 December 2018

Histamine

- Produced by histamine-producing bacteria (part of the natural microflora of the skin, gills and gut of freshly caught fish) during spoilage and fermentation of fish
 - especially in fish species naturally high in histidine (an amino acid)




Scombrototoxin fish poisoning (SFP) (often called “histamine poisoning”)

- **Caused by ingestion of food containing high levels of histamine**
 - **symptoms include tingling and burning sensation around the mouth, facial flushing and sweating, nausea, vomiting, headache, palpitations, dizziness and rash**
 - **the onset of symptoms is within a few hours after consumption**
 - **symptoms will normally disappear in 12 hours without long term effect**



Local situation

- In 2018, Centre for Food Safety (CFS) found two prepackaged anchovy fillets contained high level of histamine in the market

 Centre for Food Safety
The Government of the Hong Kong Special Administrative Region

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Food Alert

Stop consuming two kinds of prepackaged anchovy fillets detected with histamine

Issue Date	25.6.2018
Source of Information	Centre for Food Safety (CFS)
Food Product	Prepackaged anchovy fillets
Product Name and Description	(1) Product name: Filetti di Acciughe in Olio d' Oliva con Tartufo (Anchovy Fillets with Truffle in Olive Oil) Brand: TartufLanghe Place of origin: Italy Net weight: 90 grams per pack Best before date: August 31, 2018 (2) Product name: Flat Fillets of Anchovies With Capers in Olive Oil Brand: ROCCA Place of origin: Italy Net weight: 100 grams per bottle Best before date: July 31, 2019
Reason For Issuing Alert	<ul style="list-style-type: none">• The CFS collected the two abovementioned samples from the city/super supermarket in Causeway Bay for testing under its routine Food Surveillance Programme. The test results showed that the samples contained histamine at levels of 220 milligram (mg) per 100 gram (g) and 260mg per 100g respectively.



International situation

- **Recalls of various fish and fish products due to high level of histamine detected by other authorities**
 - **A few related Food Incident Posts issued by CFS in the past 10 years**

Food Incident Post

Year: Month:

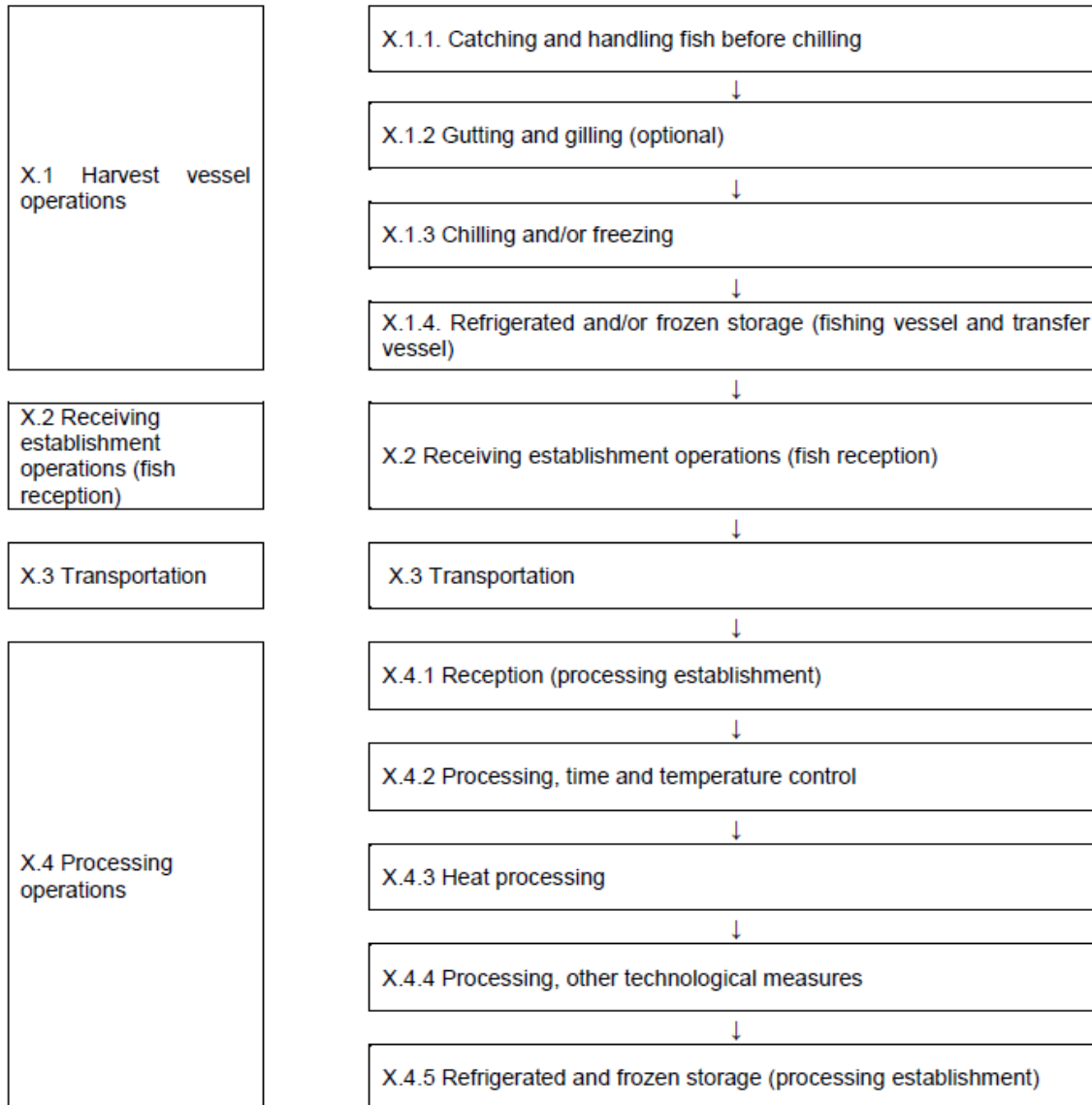
Upload Date	Title
11.2.2017	<ul style="list-style-type: none">• (Food Allergens) The Food Safety Authority of Ireland (FSAI) – Notice of a batch of Toblerones in Ireland which was mislabeled and resulted in undeclared egg• The Food Safety Authority of Ireland (FSAI) – Recall of a batch of Tesco Mackerel Fillets due to elevated histamine

Codex Code of Practice for Fish and Fishery Products (CXC/RCP 52-2003)

- **Offering recommendations on the production, storage, handling, distribution and retail display of fish and fishery products**
 - **guidance for the control of histamine; for fish and fishery products at risk for histamine formation (adopted in 2018; REP18/FH Appendix II)**
http://www.fao.org/fao-who-codexalimentarius/sh-proxy/es/?Ink=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FMeetings%252FCX-712-49%252FReport%252FREP18_FHe.pdf
 - **the revised Code will be published on the Codex website after adoption of the consequential amendments**

CAC/RCP 51-2003	Code of Practice for the Prevention and Reduction of Mycotoxin Contamination in Cereals	CCCF	2017	✓ ✓ ✓ ○ ○ ○
CAC/RCP 52-2003	Code of Practice for Fish and Fishery Products	CCFFP	2016	✓ ✓ ✓ ✓ ○ ○
CAC/RCP 53-2003	Code of Hygienic Practice for Fresh Fruits and Vegetables	CCFH	2017	✓ ✓ ✓ ○ ○ ○

Example flow chart for the production of fish and fish products



Highlights on the recommendations

- Harvest vessel operations

- **Rapid chilling as soon as possible after death is the most crucial aspect of histamine control**
 - **Bacterial growth and histamine formation accelerate exponentially with time under unrefrigerated conditions**
- **Sufficient ice to completely surround the fish should be used to bring the internal temperature of fish to below 4°C as quickly as possible after death**



Highlights on the recommendations - Receiving establishment operations

- During offloading of fish from the vessel (and any point of transfer in the supply chain), care should be taken that the cold chain is maintained
- Fish temperature, signs of decomposition and histamine levels and/or vessel records are best monitored



Highlights on the recommendations - Transportation

- **Transport vehicles should be adequately equipped to keep fish cold**
 - **Refrigerated fish should be stored at a temperature as close as possible to 0°C**



Highlights on the recommendations - Processing operations: time- temperature control

- **When fish undergo processing, it is important that they are not subjected to time-temperature conditions where histamine-producing bacteria can grow and produce histamine to unacceptable levels**
 - **Processing room temperature should be maintained as cool as practical during processing operations**
 - **Product exposure time should be minimised**



Highlights on the recommendations - Processing operations: heating processing

- Adequate heat treatment (e.g. cooking, hot smoking) can kill histamine-producing bacteria and inactivate histidine decarboxylase enzyme
 - BUT once formed, histamine is heat stable i.e. is not destroyed by heat
- Canned or pouched products: container protects the product from bacterial recontamination → no further histamine is produced when stored at ambient temperature
 - BUT once the package is opened, histamine formation can occur again



Highlights on the recommendations - Processing operations: Processing, other technological measures

- Time and temperature control is the recommended method for preventing histamine formation
- Depending on the treatment, the finished products may need to remain chilled until consumed to ensure safety



Summary

- **Factors affecting the level of histamine in fish and fish products**
 - the type of fish (i.e. the amount of histidine in the fish);
 - the way the fish is handled (i.e. the potential for bacterial growth in the fish products); and
 - the duration, conditions and temperature of storage of the fish
- **The trade is advised to observe the recommendations in the Codex Code of Practice for Fish and Fishery Products to ensure food safety**



End

