

codex alimentarius commission



FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD
HEALTH
ORGANIZATION



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Agenda Item 9

CX/FFP 06/28/9

JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON FISH AND FISHERY PRODUCTS

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Beijing, China
18-22 September 2006

PROPOSED DRAFT CODE OF PRACTICE FOR THE PROCESSING OF SCALLOP MEAT (Prepared by Canada)

The Proposed Draft Code is distributed for comments at Step 3. Governments and international organizations wishing to comment are invited to do so in writing, preferably by Email, to the Secretary, Joint FAO/WHO Food Standards Programme, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy, Fax: +39 (06) 5705 4593, e-mail : codex@fao.org with a copy to the Codex Contact Point of Norway, Norwegian Food Control Authority, P.O. Box 8187 Dep. 0034 Oslo, Norway, Fax: +47.23.21.70.01, E-mail: CCFPP@mattilsynet.no **before 20 August 2006.**

BACKGROUND

1. Since 2000, the Codex Committee on Fish and Fishery Products (CCFFP) has been discussing the *Proposed Draft Standard for Quick Frozen Scallop Adductor Muscle Meat* and while a number of essential elements in the Proposed Draft Standard were addressed, the Committee has not been able to reach an agreement on an acceptable upper level moisture content in scallop meat and the expression of moisture content. Over several sessions, the Committee reviewed information and noted the significant challenge in establishing a strict upper moisture limit given the variability in moisture content between species, and the effect of seasonality, harvest practices and other factors on moisture level. The discussion on the *Proposed Draft Standard for Quick Frozen Scallop Adductor Muscle Meat* has been progressing.
2. At the 27th session of the CCFFP (2005), several delegations noted that Good Manufacturing Practice was very important to provide standardized guidance on issues such as moisture and proposed to start work on the Code of Practice on the processing of scallop meat. The Committee agreed to initiate the elaboration of the Code of Practice for the Processing of Scallop Meat in the framework of the Code of Practice for Fish and Fishery Products subject to approval by the Codex Alimentarius Commission (Alinorm 05/28/18, para 114).
3. The project document submitted to the Codex Alimentarius Commission indicated that the proposed work would address the following main aspects:
 - a. The processing of fresh scallop meat on board a harvesting vessel prior to offloading and the processing of frozen scallop meat at a facility.
 - b. The identification of potential hazards and defects associated with the scallop processing.

- c. The guidance text will take into account the controls for freshwater use and polyphosphate treatment during handling and processing, while also addressing the general processing guidance.
4. The Codex Alimentarius Commission, at its 28th Session (2005), approved new work on the Proposed Draft Code of Practice for the Processing of Scallop Meat (ALINORM 05/28/31, Appendix VIII).

RECOMMENDATION

5. The Committee is invited to consider the attached Proposed Draft Code of Practice for the Processing of Scallop Meat (Annex 1) with a view towards its further progression in the Codex Step Procedure.

PROPOSED DRAFT CODE OF PRACTICE FOR THE PROCESSING OF SCALLOP MEAT

(At Step 3)

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SECTION 2 DEFINITIONS

For the purpose of this Code:

Refrigerated Sea Water	is sea water in fixed tanks chilled by mechanical refrigeration
Roe on scallop	is the scallop adductor muscle meat and the roe sac remaining after the viscera has been completely detached from the scallop shell.
Scallop Meat	is the adductor muscle meat remaining after the viscera and/or roe have been completely detached from the scallop shell.
Shucking	is the process of removing the adductor muscle meat and completely detaching the viscera or viscera and roe from the shell of live scallops.

SECTION X PROCESSING OF FRESH AND FROZEN SCALLOP MEAT

In the context of recognising controls at individual processing steps, this section provides examples of potential hazards and defects and describes technological guidelines, which can be used to develop control measures and corrective action. At a particular step only the hazards and defects, which are likely to be introduced or controlled at that step, are listed. It should be recognised that in preparing a HACCP and/or DAP plan it is essential to consult Section 5 which provides guidance for the application of the principles of HACCP and DAP analysis. However, within the scope of this Code of Practice it is not possible to give details of critical limits, monitoring, record keeping and verification for each of the steps since these are specific to particular hazards and defects.

As stressed by this Code, the application of appropriate elements of the pre-requisite program (Section 3) and HACCP principles (Section 5) at these steps will provide the processor with reasonable assurance that the essential quality, composition and labelling provisions of the appropriate Codex standard will be maintained and food safety issues controlled.

The commercial harvest practices of scallops can be quite variable. For instance, shucking can occur either on board fishing vessels or in land based facilities. In addition, fishing voyages can typically range from 1 to 10 days. For long fishing voyages where shucking is performed at sea and kept chilled by the application of freshwater ice, the time that the scallop meat is exposed to the melting ice can affect both the product quality and composition. The washing of scallop meat during processing is also a source of freshwater exposure affecting product composition. For the product to meet international and/or regulatory standards aimed to prevent consumer fraud and unfair trade practices, scallop fishers and processors should have proper controls in place with particular attention paid to limit excessive addition of freshwater water to the product.

This section covers the processing of fresh scallop meat on board a long haul harvesting vessel prior to offloading and the processing of IQF frozen scallop meat at the processing facility. This section will also address the use of freshwater and polyphosphate treatment during processing. The example of the flow diagram (Figure X.1) will illustrate some of the common steps involved in the processing of scallop meat.

X.1 GENERAL ADDITION TO PRE-REQUISITE PROGRAMME

Section 3 - Pre-requisite programme gives the minimum requirements for good hygienic practices for a harvesting vessel and processing facility prior to the application of hazard and defect analysis. In addition to the guidelines described in Section 3, the following should also be considered:

- *To be elaborated*

X.2 IDENTIFICATION OF HAZARDS AND DEFECTS

Refer also to Section 5.3.3 Conduct Hazard and Defect Analysis.

X.2.1 Hazards

Refer also to Section 5.3.3.1 Identification of Hazards and Defects. Where marketing of whole scallops and roe-on scallops is concerned, these products should meet the relevant hygienic provisions outlined in the Proposed Draft Codex Standard for Live [and Raw] Bivalve Molluscs (*under development*). For example, marine biotoxins will need to be included in the hazard analysis since the gonads and roe may be toxic.

This Section describes the main hazards and defects specific to scallop meat.

X.2.1.1 Marine Biotoxins

Phycotoxins such as DSP, PSP or ASP are generally not a food safety concern in scallop adductor muscle meat alone and therefore do not pose a human health risk. Scientific data regarding the contamination of scallop meat with biotoxins are limited and suggests that only some scallops may be affected by marine biotoxins in scallop meat. For instance, it appears that the purple-hinged rock scallop (*Crassidoma giganteum* / *Hinnites multirugosus*) accumulates PSP toxin in the adductor muscle.

X.2.2 Defects

The potential defects below are outlined in the essential quality, labelling and composition requirements described in the Proposed Draft Codex Standard for Quick Frozen Scallop Adductor Muscle Meat (*under development*).

End product specifications outlined in Appendix 'X' describe optional requirements specific to scallop meat.

X.2.2.1 Parasites

Parasites are known to affect the respiratory system, organs and the connective tissue of organs (i.e. Perkinsis spp.). Sulcascaris sulcata, a nematode, has been known to parasitize the adductor muscle of calico scallops. Scientific information is limited on the significance of scallop parasites to public health. Never the less, the infestation of mature parasites in scallops or the presence of cysts can be aesthetically offensive to consumers.

X.2.2.2 Excessive Viscera

During the shucking of scallops, incomplete removal of the viscera and other parts of the intestine from the scallop meat could occur. Excessive amounts could result in undesirable physical attributes in the final product that would be objectionable to consumers.

X.2.2.3 “Added water”

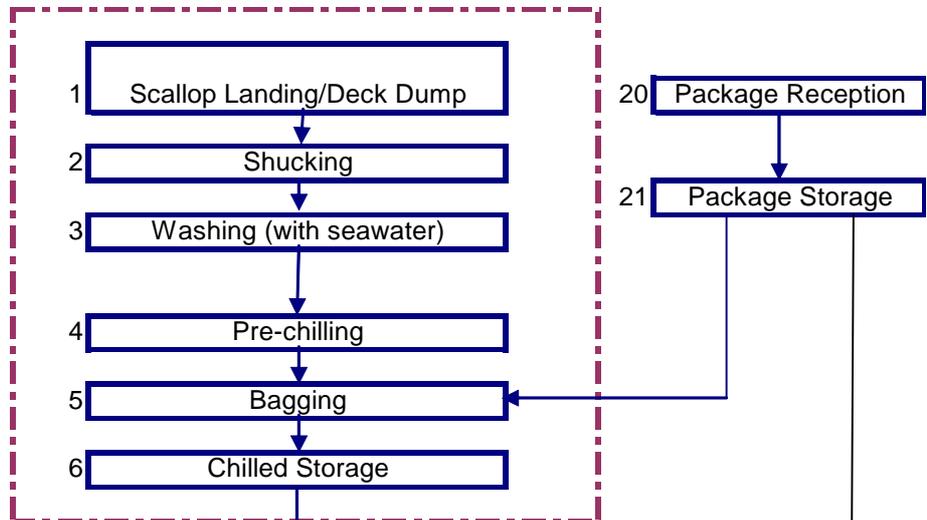
It has been shown that freshwater in contact with scallop adductor muscle meat will increase its moisture content over time. This is because the adductor muscle of a scallop is made up of parallel strands of fibers that can absorb water through capillary action. If scallop adductor muscle meat has been in contact with freshwater for an excessive amount of time, water is added to the product and consumer fraud and unfair trade practices could result. The use of polyphosphates in scallops during processing will bind added water and if used improperly, can potentially lead to consumer fraud and unfair trade practices.

Product labelling can help minimize economic fraud by providing information to consumers so that informed purchasing choices can be made. However, proper processing controls should also be in place by the processor to ensure that added water and polyphosphate use meets international and regulatory standards. (i.e. GMP's must be properly applied and adhered to by the processor.)

This flow chart is for illustrative purposes only. For in-factory HACCP implementation a complete and comprehensive flow chart has to be drawn up for each process.

References correspond to relevant Sections of the Code

Long Haul Harvesting Vessel Operations



Land Based Facility Operations

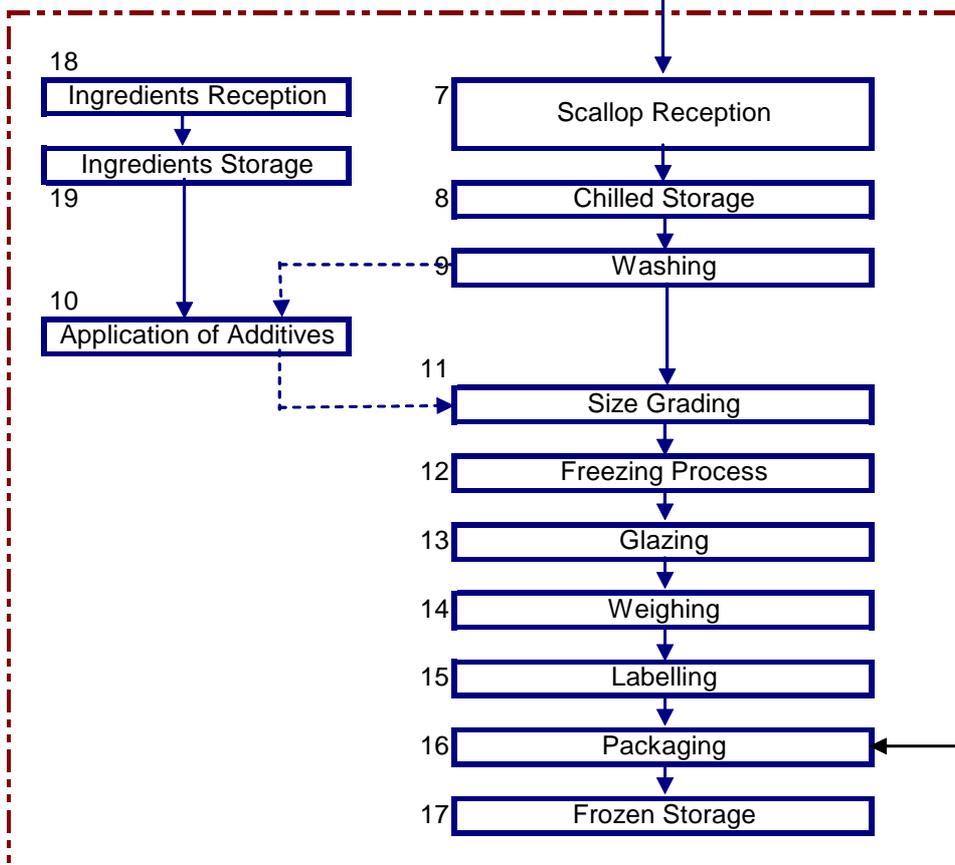


Figure X.1 Example of flow chart of processing of scallop meat

X.3 PROCESSING OPERATIONS

X.3.1 Processing Of Fresh Scallop Meat On Board a Long Haul Harvesting Vessel Prior To Offloading

Generally, there are two categories of voyages characterized by the proximity of the harvest site (fishing ground) relative to the land based processing facility. “Short haul voyages” are typically 1 - 2 days in the case of inshore wild caught fisheries and daily as in the case of aquaculture controlled harvest. “Long haul voyages” are typically offshore fishing voyages that last 10 days or less. On long haul voyages, shucking of scallops is carried out on board fishing vessels. Products are kept chilled by the application of freshwater ice and placed in appropriate refrigerated storage.

X.3.1.1 Scallop Landing/Deck Dump (Processing Steps 1)

Potential Not likely

Hazards:

Potential Defects: *Not likely*

Technical Guidance:

- Live scallops should be collected and placed in clean storage containers without undue delay.
- Scallops requiring shucking on arrival at the processing facility should be adequately chilled, handled without undue delay and with care to avoid contamination.

X.3.1.2 Shucking (Processing Steps 2)

Potential Not likely

Hazards:

Potential Defects: *Remaining viscera*

Technical Guidance:

- Care should be taken to ensure that the viscera, connective tissue and roe (if applicable) are completely removed from the scallop meat.

X.3.1.3 Washing with Sea Water (Processing Steps 3)

Potential Shell fragments

Hazards:

Potential Defects: *Remaining viscera, physical contamination (sand, debris)*

Technical Guidance:

- An adequate supply of clean sea water should be available for washing of:
 - live scallops prior to shucking;
 - scallop meat after shucking to remove any viscera, connective tissue, foreign matter and shell fragments.

X.3.1.4 Pre-chilling (Processing Steps 4)

Potential Not likely

Hazards:

Potential Defects: *Moisture (added water) - applies to pre-chilling using freshwater*

Technical Guidance:

- Pre-chilling of the scallop meat should be employed to reduce the core temperature of the scallop meat prior to being placed in chilled storage. This step can minimize the amount of ice melt and consequently freshwater contact with the scallop meat during chilled storage.
- Pre-chilling involves the immersion of the scallop meat in refrigerated sea water for a specified period of time.

- If freshwater ice is used in conjunction with sea water, the contact time for each batch should be kept as short as practical.
- Water used for pre-chilling should be periodically replaced minimise the bacterial load and ensure functional water temperature.

X.3.1.5 Bagging (Processing Steps 5, 20, 21)

Potential *Not likely*

Hazards:

Potential Defects: *Not likely*

Also refer to Section 8.5.1 - Reception – Packaging, Labels & Ingredients; Section 8.5.2 – Storage - Packaging, Labels & Ingredients and Section 8.4.4 - Wrapping and Packing,

Technical Guidance:

- After the scallop meats are packed in clean bags made of a suitable material, a tag or other appropriate identification should be attached to each bag to determine the date of harvest and other relevant product information.
- The bagged scallop meats should be kept in a clean condition.

X.3.1.6 Chilled Storage (Processing Steps 6)

Potential *Not likely*

Hazards:

Potential Defects: *Decomposition, Moisture (added water)*

Also refer to Section 8.1.2 – Chilled Storage

Technical Guidance:

- The bags of scallop meat should be surrounded by sufficient finely divided ice.
- The chilled storage or storage containers should be adequately drained so that freshwater from the melted ice has minimal contact with the product near the bottom layer.
- Stock rotation schemes/plans should be developed to ensure proper utilisation of the scallops.

X.3.2 Processing of IQF Frozen Scallop Meat

This section is designed to augment the Processing of Fresh Scallop Meat On Board a Long Haul Harvesting Vessel section with additional operation steps pertaining specifically to the processing of IQF frozen scallop meat.

X.3.2.1 Scallop Reception (Processing Steps 7)

Potential *Marine Biotoxin (applies to roe-on scallops)*

Hazards:

Potential Defects: *Decomposition, Moisture (added water)*

Technical Guidance:

- Product specifications could include the following characteristics:
 - ⇒ organoleptic characteristics such as appearance, odour, texture, etc;
 - ⇒ acceptable upper limit moisture content (*DN: possible methods of analysis (ie. % moisture and M/P ratio could be appended as an annex for reference purposes)*);
 - ⇒ workmanship (excessive viscera/roe (in the case of adductor muscle meat only));
 - ⇒ presence of parasites;
 - ⇒ foreign matter.
- For the marketing of roe-on scallops, a processor should have a process in place to ensure that the toxicity content meets the regulatory requirements to the satisfaction of the official agency having jurisdiction. For example, this could be accomplished by, but not limited to, adherence to monitoring programs or end product testing.

- Skills should be acquired by scallop handlers and appropriate personnel in sensory evaluation techniques to ensure incoming lot meet essential quality provisions of the Codex Standard for Quick Frozen Scallop Adductor Muscle Meat.
- Scallop meats should be processed efficiently, without undue delay and with care to avoid contamination.
- Scallop meat should be rejected if known to contain harmful, decomposed or extraneous substances, which will not be eliminated or reduced to an acceptable level by normal procedures of sorting or preparation. An appropriate assessment should be carried out to determine the reason(s) for loss of control and the HACCP or DAP plan should be modified where necessary.

X.3.2.2 Chilled Storage (Processing Steps 8)

Potential *Not likely*

Hazards:

Potential Defects: *Decomposition*

Also refer to Section 8.1.2 – Chilled Storage

Technical Guidance:

- For scallop meat packed in cotton bags, their identification tag facilitate the determination of the harvest date and the number of days the product has been kept in contact with freshwater ice. Stock rotation schemes/plans should be developed to ensure proper utilisation of the scallops.

X.3.2.3 Washing (Processing Step 9)

Potential *Shell fragments*

Hazards:

Potential Defects: *Excessive moisture (added water), physical contamination (sand, debris)*

Technical Guidance:

- Scallop meat should be gently agitated to allow separation from each other and to ensure the removal of foreign matter.
- Since washing requires typically 20 – 40 minutes, chilled salt water (3%) should be used for the washing of scallop meat to minimize the uptake of moisture.
- Chilled salt water should be prepared from potable water and food grade salt.
- The use of freshwater should be avoided. If used, a washing method should be clearly defined and should address the contact time.
- The washing schedule (contact time parameters) should be carefully monitored.
- The washed scallop meats should be adequately drained.
- After washing, the scallop meat should be immediately processed or refrigerated and kept at the adequate temperature (temperature of melting ice).

X.3.2.4 Application of Additives to Scallop Meat (Processing Step 10, 18, 19)

Potential *Not likely*

Hazards:

Potential Defects: *Excess Moisture (added water), off-flavours*

Also refer to Section 8.5.1 Reception – Packaging, Labels & Ingredients and Section 8.5.2 Storage - Packaging, Labels & Ingredients.

Technical Guidance:

- Soaking scallop meat in a phosphate solution is the most common method of polyphosphate application. Polyphosphates can also be applied by dipping, spraying or tumbling in phosphate solution. (add reference??)

- If polyphosphates are used, a processor should develop a process for its application in order to consistently achieve its beneficial functional goals such as retention of natural moisture (i.e. to prevent drip loss) and flavour, inhibiting fluid losses of fresh shipments during transport and prior to sale, inhibiting oxidation flavours and lipids by chelation of heavy metals and cryoprotection, thereby extending shelf life.
- Polyphosphates should be blended in the proper proportions and should adhere to the appropriately validated contact time. The amount of water absorbed by the scallop meat will increase with soaking time.
- Additives should comply with the requirements of the Codex General Standard for Food Additives.

X.3.2.5 Size Grading (Processing Steps 11)

Potential Hazards: *Not likely*

Potential Defects:

Decomposition

Technical Guidance:

- Size grading of scallop meat is typically undertaken through mechanical graders of various degrees of sophistication. There is a possibility of scallop meat becoming trapped in the bars of the graders so that regular inspection is required to prevent “carry-over” of old scallop meat.
- After grading, the scallop meat should be immediately processed or refrigerated and kept at the adequate temperature (temperature of melting ice).

X.3.2.6 Freezing Process (Processing Step 12)

Potential Hazards: *Not likely*

Potential Defects: *Texture deterioration, development of rancid odours, dehydration*

Refer to Section 8.3.1 Freezing Process

X.3.2.7 Glazing (Processing Step 13)

Potential Hazards: *Not likely*

Potential Defects: *Subsequent dehydration, incorrect net weight*

Refer to Section 8.3.2 Glazing

- Care should be taken to ensure that the entire surface of the frozen scallop meat is covered with a suitable protective coating of ice and should be free of exposed areas where dehydration (freezer burn) can occur.

X.3.2.8 Weighing (Processing Step 14)

Potential Hazards: *Unlikely*

Potential Defects: *Incorrect net weight*

Refer to Section 8.2.1 Weighing

X.3.2.9 Labelling (Processing Steps 15)

Potential Hazards: *Unlikely*

Potential Defects: *Incorrect labelling, undeclared additive*

Also refer to Section 8.2.3 Labelling

Technical Guidance:

- Where polyphosphate was used in the process, a system should be in place to ensure that this additive is properly declared on the label.
- Where moisture content prescribed by national legislation has been exceeded, the label must indicate that water was added in accordance with the Codex Standard for QF Scallop Adductor Muscle Meat

X.3.2.10 Packaging (Processing Steps 18, 19, 20, 21)

Potential Hazards: Not likely

Potential Defects:

Potential Defects: Not likely

Refer to Section 8.5.1 Reception – Packaging, Labels & Ingredients; Section 8.5.2 Storage - Packaging, Labels & Ingredients and Section 8.4.4 Wrapping and Packing

X.3.2.11 Frozen Storage (Processing Steps 17)

Potential Hazards: Unlikely

Potential Defects: Dehydration, decomposition, loss of nutritional quality

Refer to Section 8.1.3 Frozen Storage

APPENDIX ‘X’ – OPTIONAL FINAL PRODUCT REQUIREMENTS – SCALLOP MEAT [TO BE COMPLETED]

- **Varying colour (i.e light orange verses milk white):** In the spring, sea scallops have orange-colored roe that can bleed into the adductor muscle. This cosmetically different product known as "pumpkins" in the scallop industry, may not be preferred in some markets.