



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

Thirty-Second Session

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Proposed Draft Code of Practice for Fish and Fishery Products (section on Sturgeon Caviar)

COMMENTS AT STEP 3

(Canada)

CANADA

GENERAL COMMENTS

Canada appreciates the work of Iran in preparing the *Proposed Draft Code of Practice for Fish and Fishery Products – section on Sturgeon Caviar* (at step 3 of the procedure). Canada continues to support the advancement of this Code of Practice in the Codex Step procedure and wants to inform the CCFFP that it has the following comments:

1. Codex Codes of Practices should be built based on a special format (see reference below). Sections within this document should be cross referencing generic CODEX documentation (e.g, good manufacturing practices/good hygienic practices). We would suggest that this document be reformatted to reflect the above.

Reference: Food Hygiene basic texts. Available at:

<http://www.fao.org/docrep/006/y5307e/y5307e00.htm>

2. From “[Figure X.1 Sample of flow diagram for caviar production](#)” it appears that the pasteurization step (#20) is an optional processing step. Although the level of salt in the product, combined with storage temperatures, may control the growth of proteolytic (temperature < 10°C) and non-proteolytic *Clostridium botulinum* (> 5% salt in the water phase) in a hermetically sealed container, without heat pasteurization (as suggested by one pathway) the hazards from non-spore forming micro-organisms of public health significance (such as *Listeria monocytogenes*, *E. coli*, etc.), which could contaminate the product, by handling under non-sterile conditions during commercial production, would not be addressed. Although this processing technique (i.e., unpasteurized/refrigeration) may appear to limit the growth of pathogens, if the initial microbiological load is high enough to cause human illness (i.e., above the minimum infectious dose), the safety of the product could be questioned as this technique is only bacteriostatic.

Note 1: Heat treatment could be one example of an effective means to address the hazard of pathogenic, non-spore forming microorganisms.

Note 2: There has been a number of *E. coli* O157:H7 illnesses reported in Japan associated with the consumption of high salt (13%) salmon roe (Makino *et al.*, 2000).

Makino, S., Kii, T., Asakura, H., Shirahata, T., Ikeda, T., Takeshi, K. and Itoh, K. (2000). Does enterohaemorrhagic *Escherichia coli* O157:H7 enter the viable but nonculturable state in salted salmon roe? *Applied and Environmental Microbiology*, 66(12): 5536-5539.

Note 3: In a recent Finnish study, it was shown that the overall prevalence of *L. monocytogenes* in the roes of different fish species was 5% (Miettinen *et al.*, 2003). However, to our knowledge, there has been no reported case of listeriosis associated to fish roe caviar products, but the potential may exist.

Miettinen,H., Arvola,A., Luoma,T., and Wirtanen,G. (2003). Prevalence of *Listeria monocytogenes* in, and microbiological and sensory quality of, rainbow trout, whitefish, and vendace roes from Finnish retail markets. *Journal of Food Protection*, 66 (10). 1832-1839.

Overall suggestion: Science based measures to control both spore forming and non-spore forming microorganisms should be applied.

3. From "Figure X.1 Sample of flow diagram for caviar production" it appears that the refrigeration step (#22) is an optional processing step. To minimize the possibility of any microbial growth, "cold" has been defined as being lower than 15°C (e.g., 17-5). Canada is concerned by the statement because the minimum growth temperature for most foodborne pathogenic microorganisms is below 15°C. For example, the minimum growth temperature for pathogenic *E. coli* is 7°C, *L. monocytogenes* is -0.4°C, for *Salmonella* is 5°C, for *Shigella* is 7°C, for *Staphylococcus aureus* is 10°C and *V. parahaemolyticus* is 5°C. In the case of hermetically sealed containers, non-proteolytic strains of *C. botulinum* can grow at temperatures above 3°C.

Canada recommends that the storage/manipulation at a temperature above refrigeration be reconsidered and that the requirement be more precise to address these concerns.

4. The English grammar requires editorial revision throughout the document.

SPECIFIC COMMENTS

Section: General considerations

5. 1st paragraph, 3rd sentence:, regarding the clause, "*It should be recognized . . .*"

Revise to read :*"It should be recognized that in preparing a Hazard Analysis Critical Control Point (HACCP) and/or Defect Action Point (DAP) plan, it is essential to consult Section 5 Hazard Analysis and Critical Control Point(HACCP) and Defect Action Point (DAP) Analysis of the Code of Practice for Fish and Fishery Product....*

Reason: Editorial. To provide clarity on the document being referred.

6. 3rd paragraph, 1st sentence: regarding the clause, "*Physicochemical properties...*"

Revise to read "*Physicochemical properties of caviar cause to classify this food as a ~~highly~~ perishable.*

Reason: Unprocessed roe is highly perishable however because caviar is "preserved" and has a long expected shelf-life, it is not considered "highly" perishable.

7. 3rd paragraph 4th sentence: regarding the clause, "*However, minimal processing...*"

Revise to read :*"However, minimal processing (non thermal processing) and using of combination of preservation techniques may **guarantee maintain** the caviar safety as well as fresh and natural characteristics."*

Reason: It is not feasible to guarantee food safety (zero risk).

8. 5th paragraph:

Include the following statement: "**The risk of transfer of pollutants from the water used for washing fish eggs and other process steps is another potential microbiological hazard. Clean potable water shall be used for this purpose.**"

Reason: To align the text with the chemical hazards paragraph. Alternatively, to avoid repeating the same clause in both the '*Microbial hazards*' and '*Chemcial hazards*' sections, rewriting the «Microbiological/Chemical hazards» might be considered.

Section X.4 Belly cutting and ovary removal**9. Potential Defects**

Revise to read: “Physical damages to eggs, off flavour, off odour, decomposition, ~~parasites~~”

Reason: The Codex Standard for Sturgeon Caviar (CODEX STAN 291-2010) has not elaborated any provisions or specified levels (Hygiene or Defectives) for parasites in this product. Canada questions the inclusion of parasites as a potential defect. If there is adequate scientific justification for parasites to be included as a potential defect, consideration should be given to address this matter in the Codex Standard and to elaborate specific technical guidance to eliminate or reduce this defective to an acceptable level.

Section: X.7 Laying induction by injection of hormones**10. 1st bullet, regarding the clause: “Fish could be injected 1 to 3 times....”**

Delete the clause : “Fish could be injected 1 to 3 times and once the female release the eggs she is asleep for large fish (otherwise they are impossible to handle and can be hurt).”

Replace with the following statement : “**If hormones are used to induce ovulation (or to assist the release of eggs), the hormones should have undergone regulatory assessment and be approved for use by the competent authority. Similarly, any anaesthetics used for handling the fish should also be subjected to regulatory assessment and approval. Use of drugs should follow the recommended conditions of use including the observance of appropriate withdrawal period to ensure food safety.**”

Reason: To be consistent with the Codex Standard for Sturgeon Caviar (Codex Stan. 291-2010) which states “If hormones are used to produce ovulated eggs, they should be approved for use by the competent authority having jurisdiction.”

11. 2nd bullet, regarding the clause: “It should be mentioned.....”

Revise to read: “It should be mentioned that the waiting time between the injection of hormone and the **harvest for human consumption of caviar** must be respected: there should not be residuals of hormones in caviar.”

Reason: To align the text with section X.8 and have a waiting time that can be verified/enforced.

Section: X.17 Fish eggs and additives weighting and blending**12. 9th bullet, regarding the clause: “Ambient temperature...”**

Revise to read: Ambient temperature (work space) and moisture should be set so that it does not affect the homogeneous distribution of additives and also ~~does not cause~~ **minimises** microbial growth (~~proper temperature is lower than 15°C~~).

Reason: It is too strong to state “no” microbial growth. In reference to ambient working temperature being preferably kept lower than 15°C, we recommend it be set at a much lower temperature, as microbial growth can occur at these temperatures. See Canadian ‘GENERAL COMMENTS No.3’ above.

Section: X.18 Extra saltwater removal and grading**13. 5th bullet, regarding the clause: “To minimize possibility ...”**

Revise to read: ~~To minimize possibility of any microbial growth~~ **The ambient temperature and duration of the** ~~during~~ extra saltwater removal (sieving), ~~the ambient temperature~~ should be set to ~~cold (lower than 15°C)~~ **minimize microbial growth.**

Reason: To reflect what can be reasonably achieved by the control measures. For the temperature setting, see Canadian ‘GENERAL COMMENTS No.3’ above.

Section: X.19 Caviar packing, air exhausting and primary coding**14. 1st bullet, regarding the clause: “All packaging materials...”**

Revise to read: All packaging materials should be ~~checked~~ **verified** prior to use to ensure that they are ~~uncontaminated~~ **not contaminated** and free from any physical damages. These materials should be dry, consistent and persistent against environmental conditions.

Reason: The language used brings confusion over the intention of the control measures: it is not clear whether the inspection “checked” is only visual, in which case microbial contamination “uncontaminated” cannot be found, or it is intended to verify for the presence of bacteria, in which case the term “checked” needs to be replaced by a more appropriate word.

15. **6th bullet, regarding the clause: “Regarding weight pressure...”**

Revise to read: Regarding weight pressure of caviar cans, **salt and water will leave cans** during cold storage and should be continuously cleaned from cans (except of pasteurized jars)

Reason: The language used brings confusion over the intention of the control measures: it is not clear whether containers are **hermetically** sealed (X.19, 4th bullet “Exhausting and sealing of cans...”) to prevent air from entering or **not hermetically** sealed to let salt and water leave cans. It is contradictory. Not hermetically sealed cans raise concerns of cross-contamination

16. **8th bullet, regarding the clause: “To minimize possibility...”**

Revise to read: ~~To minimize possibility of any microbial growth, t~~ The ambient temperature should be set **to minimize possibility of microbial growth** ~~cold (lower than 15°C).~~

Reason: To reflect what can be achieved by the control measures. For the temperature setting, see Canadian ‘GENERAL COMMENTS No.3’ above.

Section: X.22 Refrigeration

17. **6th bullet, regarding the clause: “To avoid cross-contamination...”**

Delete: “~~To avoid cross-contamination, any other food stuff should not be stored together with eaviar cans/jars.~~”

Reason: This precautionary measure is not necessary for caviar packed in hermetically sealed containers (see Section X.19 Caviar packing, air exhausting and primary coding above, Technical Guidance, 1st bullet).

Section: X.23 Cold storage and Caviar recheck

18. **1st bullet, regarding the clause: “Caviar should be...”**

Revise to read: Caviar should be ~~storage in~~ **[stored at]** an appropriate temperature (e.g. -2 °C for caviar with ~~3-5% salt~~ **at least 5% of water phase salt** (acceptable deviation is 0°C to -4°C)).

Reason: It is our understanding that all caviar should have at least 5% water phase salt (see ‘Section: X.17 Fish eggs and additives weighting and blending’ ,7th bullet) and since that is the measurable food safety parameter, we therefore suggest to amend the text.

Section: X. 24 Transporting and distribution

19. **1st bullet, regarding the clause: “Refer to section 17...”**

Revise to read: Refer to **section 17 of the Code of Practice for Fish and Fishery Products**

Reason: To clarify the document being referred.

20. **9th bullet, regarding the clause: “Other food stuff...”**

Delete: ~~Other food stuff should not be kept and handled with caviar cans to avoid cross-contamination.~~

Reason: This precautionary measure is not necessary for caviar packed in hermetically sealed containers (see Section X.19 Caviar packing, air exhausting and primary coding above, Technical Guidance, 1st bullet).