6. SAMPLING OF FISH AND FISHERY PRODUCTS

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Introduction

Sampling methods vary with the type of sample being taken and the location. BAM protocol (USFDA), 10 gram of sample has to be taken randomly from 100 gram of sample lot for normal microbiological analysis like TPC, total *enterobacteriaceae* count, fecal *streptococci, staphylococci, E.coli*, spoilage bacteria, fungi and yeast and molds. For salmonella and vibrio species, 25 g sample has to be taken for analysis in 225 ml lactose broth and APW (Alkaline Peptone Water) respectively. For Salmonella detection in ready to eat (RTE) products 225g sample has to be taken in 2.025L lactose broth.

Microbiological parameters to be tested for fresh fish

Total plate count	*Staphylococcus aureus*	*Vibrio species like V. cholera, V. mimicus, V. parahemolyticus etc.,*
Total enterobacteriaceae count	*E.coli*	*Optional: Shigella and Listeria monocytogenes presence*
Fecal streptococci	*Salmonella*	

Microbiological parameters to be tested for chilled/frozen fish

Total plate count	*Staphylococcus aureus*	*Vibrio* species like *V. cholera, V. mimicus, V. parahemolyticus etc*
Total enterobacteriaceae count	*E.coli*	Spoilage indicators and *H2S producers* like *Shewanella, Pseudomonas, Brocothrix* etc
Fecal streptococci	*Salmonella*	Optional: *Shigella and Listeria monocytogens, Yersenia species* etc presence

Sample received for microbiological examination are prime importance for getting proper result. If samples are improperly collected, mishandled or not representative of original lot leads to laboratory results will be meaningless. Because, interpretations are about large consignment quality based on a relatively small sample. Hence, established sampling procedures must be applied uniformly. The number of units that comprise a representative sample from a designated lot of a food product must be statistically significant.

Sterile spoon, forceps, spatula and scissors are required for sampling techniques. Hence, all the materials used for sampling must be sterile condition. The above said materials can be easily sterilized by dry heat method. Alcohol dipping along with flaming will not be sufficient to kill all pathogens unless otherwise specified.

Sampling scale for organoleptic checks:

Organoleptic checks of raw material, process and product samples shall be analysed by the approved technologist / qualified personnel to ascertain the freshness and other organoleptic qualities of the product. To carry out the work, a sample of one Kg subject to a minimum of 10 pieces shall be tested from every 500 kg of the raw material received, variety wise and source wise for conducting the organoleptic evaluation *as per HACCP* plan. Organoleptic checks shall also be conducted during processing and after freezing / packing. For the analysis of finished products, type wise and variety wise samples shall be drawn from the days production at random as per the sampling scale

No. of package in the lot	No. of packages to be
1 to 12	2
13 to 24	3
25 to 40	4
41 to 80	5
81 to 120	6
121 to 180	7
181 to 250	8
251 to 350	10
351 to 500	12
501 to 750	14
751 to 1000	18
1001 to 1300	22
1301 to 1600	25
1601 to 2000	30
2001 and above	40

Sampling scale for Microbiological analysis:

Product samples shall also be drawn for testing the above microbiological parameters from a particular production code selected. For this purpose, each variety of fishery products (shrimps, cuttle fish, squid etc) of the selected code shall be treated as a separate lot and variety wise composite samples of 150 gms each shall be drawn aseptically for testing at EIA lab. 5 samples of 150 gms each shall be drawn aseptically from a selected code, covering maximum grades possible.

Sampling scale for residues:

Residues such as antibiotics, pesticides and heavy metals can be taken based on the formula : $\{ (n)^{1/2} + 1\}/2$,

n: Number of container / consignment

Sampling scale for histamine estimation:

For testing the histamine 9 sample has to be drawn from the different sites. In the result the mean value of the 9 samples must not exceed 100 ppm. Two values can exceed 100 ppm; but less than 200ppm. No one vale goes beyond the 200 ppm.