

**Regarding CX/MAS 13/34/3, page 5, Table A, Committee on Fish and Fishery Products
Standard for Smoked fish, Smoke-Flavoured fish and Smoke-Dried Fish**

For the provision of Histamine, CCFFP has proposed AOAC 977.13 or equivalent methods.

Method performance criteria for Histamine based on ML (maximum level) could then be considered:

ML for Histamine:

According to the Report of the 32nd Session of the Codex Committee on Fish and Fishery Products (REP 13/FFP), page 40, APPENDIX III DRAFT STANDARD FOR SMOKED FISH, SMOKE-FLAVOURED FISH AND SMOKE-DRIED FISH, the following limits are given:

- The product of susceptible species shall not contain more than **10 mg of histamine per 100g fish** flesh based on the average of the sample unit tested and all products in this Standard shall be free from persistent and objectionable odours and flavours characteristic of decomposition (para 3.4 Decomposition)
- The product shall not contain histamine that exceeds **20 mg/100g fish flesh** in any sample unit tested. This applies only to susceptible species (e.g., *Scombridae*, *Clupeidae*, *Engraulidae*, *Coryphaenidae*, *Pomatomidae*, *Scomberesocidae*) (para 6.6 Histamine).
- For histamine no sample unit shall exceed **20 mg/100 g** of fish flesh as per the sampling plan chosen. (para. 10. Lot acceptance)

Suggested Method Performance Criteria:

ML (mg/kg)	Minimum applicable range (mg/kg)	LOD (mg/kg)	LOQ (mg/kg)	RSD _R (%)	Recovery(%)
100 (average)	76 - 124	10	20	16,0	90-107
200 (each unit)	155 – 243	20	40	14,4	90-107
ML mg/100g *	Minimum applicable range (mg/100g)	LOD (mg/100g)	LOQ (mg/100g)	RSD _R (%)	Recovery(%)
10 (average)	8 – 12	1	2	16,0	90-107
20 (each unit)	16 – 24	2	4	14,4	90-107

*As the MLs are given in mg/100g, it might be preferable to state the minimum applicable range, LOD and LOQ in the same unit. The calculations have to be performed in mg/kg.

The proposed method: AOAC 977.13 (fluorometric method) has been tested on the following levels (in mg/100g): 1, 20, 26, 30, 120 and 200. Except for the lowest level (1 mg/100g), the precision of the results of the collaborative study are satisfactory.

NMKL 91, 1987 is equivalent to AOAC 977.13.

Many laboratories would however prefer using HPLC for the analysis of histamine.

NMKL 196, 2013 (in press): Biogenic amines (including histamine). HPLC determination in foods. There are collaborative validations ongoing on Histamine by HPLC, both in CEN/ISO (EU mandated work) and in NMKL.