



EU Fish Processors and Traders Association
Association des Industries du Poisson de l'UE

EU Federation of National Organisations of Importers and Exporters of Fish
Comité des Organisations nationales des importateurs et exportateurs de poisson de l'UE

AIPCE/2009/22

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AIPCE-CEP comments on

Nutritional Labelling: Tolerances needed for fishery products

This proposal was made with the collaboration of the CITPPM.

Nutritional Labelling: Tolerances needed for fishery products:

Nutrient	Tolerance needed
Sodium / salt	[-65% ; + 65%]
Total Fat	[-80% ; + 120%]
Omega 3 (including EPA and DHA) and omega 6 fatty acids	[-45% ; + 45%]

Sodium

Sodium amount: those measures were made on canned tuna in brine, during 18 months (between January 2008 and June 2009).

Average amount: 468 mg/100g

Repartition of the results:

Sodium (mg Na/100g drained product)	Number of analyses	Distribution (%)
200 – 300	12	7
300 – 400	25	15
400 – 500	74	44
500 – 600	42	25
600 – 700	10	6
700 – 800	4	2

In this example the amount of sodium for canned tuna in brine vary from 200 to 800 mg/100g.

The amount of sodium in processed fishery products may vary from 200 to 800 mg/100g, for the same product and the same recipe.

This is why tolerances for sodium in fishery products should be at least: [- 65% ; + 65%]



Total Fat

Influence of the fishing period:

The proportion of SFA/MUFA/PUFA for 100g of fat in fatty fishes remains relatively stable all year long. However, the amount of total fat in fatty fishes considerably varies depending on the species, the food and environmental factors. As an example, the amount of total fat in raw sardine may vary between 1,2 g/100g in March/April and 18,4 g/100g in September/October (Bandarra et al, 1997, cf. annexe).

To AIPCE members' mind, variations observed are due to physiological stage on the sardine, which vary depending on fishing areas. As the fishing period depends on various factors (quotas, periods of species migration, etc.), it is not possible to determine the amount of total fat of fish.

Table 1—Changes in fatty acid profiles (w/w %) of total sardine lipids

Fatty acids	May 94	Jun 94	Jul 94	Aug 94	Sep 94	Oct 94	Nov 94	Dec 94	Jan 95	Feb 95	Mar 95	Apr 95
14:0	6.53	5.28	5.34	5.29	4.26	5.29	5.16	5.32	4.62	4.90	3.64	4.79
16:0	15.26	16.71	16.55	17.31	16.45	17.41	17.02	17.63	18.01	18.01	17.98	16.69
18:0	2.81	3.19	3.66	3.55	3.52	3.75	3.60	3.42	4.38	4.29	3.93	3.18
Others	1.03	1.43	1.50	1.80	1.43	1.42	1.47	1.86	1.71	1.60	1.90	0.95
ΣSat	25.63	26.61	27.05	27.95	25.66	27.87	27.25	28.23	28.72	28.80	27.45	25.61
16:1	8.74	7.33	7.54	6.55	6.80	6.99	7.04	5.93	4.59	4.56	3.07	8.93
18:1	7.39	11.05	11.98	11.64	13.32	12.85	11.86	11.72	14.29	12.30	10.70	10.69
20:1	0.97	1.82	2.05	2.33	2.49	2.20	2.22	2.51	3.23	2.54	4.27	1.21
22:1	0.56	1.56	1.04	1.67	1.39	0.70	0.86	2.16	1.57	1.31	4.84	0.78
24:1	0.40	0.62	0.45	0.57	0.50	0.48	0.53	0.68	0.86	0.88	1.37	0.46
Others	0.11	0.21	0.21	0.23	0.21	0.22	0.20	0.22	0.20	0.17	0.22	0.12
ΣMono	18.17	22.59	23.27	22.99	24.71	23.44	22.71	23.22	24.74	21.76	24.47	22.19
18:2ω6	0.64	0.88	0.83	0.99	0.89	0.84	0.93	1.05	1.01	0.96	0.80	0.59
20:4ω6	0.89	0.69	0.62	0.62	0.59	0.64	0.65	0.72	0.85	0.97	1.19	0.95
20:4ω3	0.99	1.12	1.35	1.35	1.56	1.38	1.53	1.33	1.17	1.21	0.99	0.89
20:5ω3	25.98	18.35	17.79	15.62	17.93	17.42	17.58	14.19	11.90	12.94	10.69	20.73
22:5ω3	1.99	1.67	1.83	2.12	1.18	1.93	1.91	1.94	2.18	2.42	2.67	1.99
22:6ω3	9.85	12.16	10.82	12.38	10.49	10.87	12.08	15.30	17.54	19.19	22.19	9.61
Others	9.83	9.26	9.09	8.61	9.04	8.44	8.49	7.26	5.17	5.10	3.25	9.09
ΣPoly	50.17	44.13	42.33	41.69	41.68	41.52	43.17	41.79	39.82	42.79	41.78	43.85
Fat (%)	4.9	8.3	11.1	17.6	18.4	18.2	15.8	10.0	4.3	1.9	1.2	1.3

These values do not total 100% because minor fatty acids are not reported.

Table 4— Fatty acid profiles (w/w %) of PC and PE of sardines with different fat contents

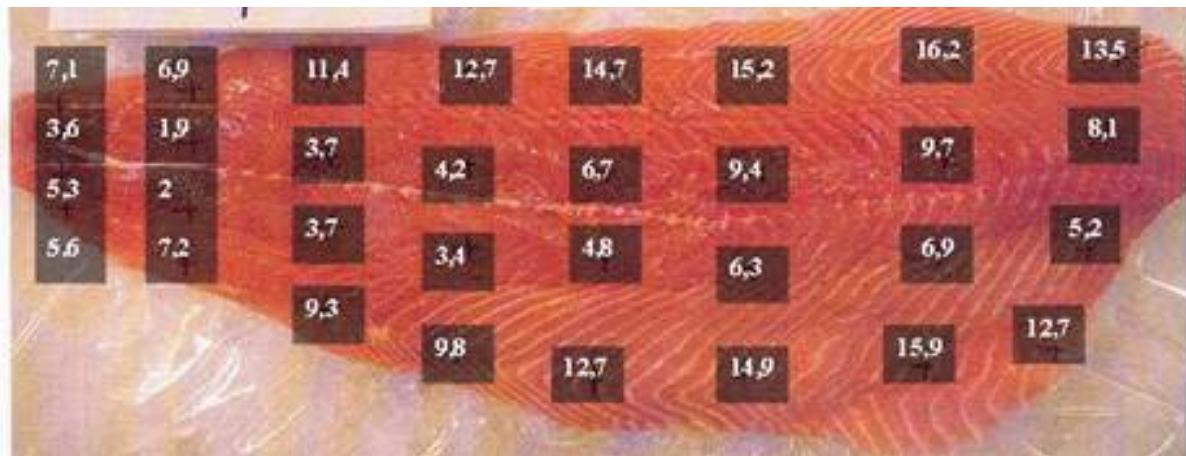
Fatty acids	Lean sardine		Fatty sardine	
	PC	PE	PC	PE
Saturated				
14:0	0.65	0.45	0.57	0.64
16:0	28.72	16.42	30.13	19.23
18:0	2.40	7.37	3.54	8.00
Others ^(a)	1.90	1.01	1.45	1.51
Total	32.82	25.25	35.69	29.38
Monounsaturated				
16:1	1.38	1.14	1.89	1.62
18:1	6.06	7.09	6.48	5.30
20:1	0.44	0.98	0.51	0.69
22:1	0.16	0	0	0.11
24:1	0.60	0.93	1.08	0.94
Others ^(b)	0.15	0.24	0.24	0.11
Total	8.79	10.38	10.20	8.77
Polyunsaturated				
18:2 ω 6	0.54	0.60	0.60	0.80
18:4 ω 3	0.22	0.09	0.36	0.16
20:4 ω 6	1.75	1.22	4.22	0.62
20:4 ω 3	0.55	0.87	0.56	0.83
20:5 ω 3	14.13	6.24	15.23	5.59
22:5 ω 3	2.04	2.20	1.33	1.31
22:6 ω 3	33.37	44.28	28.11	40.76
Others ^(c)	1.79	1.03	1.74	1.53
Total	54.39	56.53	52.15	51.60
N. Id.	3.99	7.84	1.96	10.25

PC: Phosphatidylcholine; PE: Phosphatidylethanolamine. ^(a) 15:0, 17:0, 118:0, 19:0, 20:0, 22:0, 24:0. ^(b) 17:1 ω 8. ^(c) 16:2 ω 7, 16:2 ω 4, 16:3 ω 3, 16:4 ω 3, 18:3 ω 6, 18:3 ω 3, 18:4 ω 3, 20:2 ω 6, 20:3 ω 6, 20:3 ω 3, 21:5 ω 3, 22:4 ω 6.

Variation within one fish

The amount of total fat may also vary inside the same fillet of fish. A study for the CEVPM (Centre d'Expérimentation et de valorisation des Produits de la Mer - France) shows that in a fillet of farming salmon, the amount of total fat may vary from 2 g to 16,2 g/100g, depending on the place in the fillet.

This picture shows the wide variations of total fat within a fillet of salmon (*Source : Etude de l'influence des traitements de conservation et de transformation alimentaires sur les acides gras du poisson – CEVPM – Appel d'offres ACTIA 2002*)



The 32 analysis gave 33 different results, with less fat inside the fillet and near the tail of the fish.

Variations of total fat inside a fillet of salmon (g/100g) :



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Average value	8,5
Min	1,9
Max	16,2
standard deviation	4,4

This shows a variation around the average value of [-78% ; + 91%].

Analysis from manufactured products

- On 11 samples of canned sardines in olive oil, between March 2001 and December 2008 :

Variations of total fat (g/100g of drained fish) :

Average value	15,5
Min	10,9
Max	25,8
standard deviation	4,2

This shows a variation from the average value of [-30% ; + 67%].

- On 108 analyses on smoked salmon (origin: Scotland, Norway, Ireland) :

Variations of total fat (g/100g of smoked salmon) :

Average value	9,72
Min	3,3
Max	21,1
standard deviation	2,93

This shows a variation from the average value of [-66; + 117%].

Conclusion :

Processed fishery products need a wide tolerance for total fat, especially for fatty fishes.

Due to those results, AIPCE-CEP proposes a tolerance for total fat of [- 80% ; + 120%].

NB: This tolerance is not « centred » because processed fish industries try not to use fish with not enough fat if possible.

Omega 3 fatty acids

Nutraqua is a nutritional content database in France, specialized in fish and fishery products. It is available on the Internet on www.nutraqua.com. This database provides results for 47 products and 20 nutrients.

The Table hereunder shows the variability obtained for 5 samples of 5 products of canned sardine, canned mackerel and smoked trout for different fatty acids.

CANNED SARDINE IN OLIVE OIL	Average	minimum	maximum	variation	
Oméga 6	418	323	502	-23%	20%
Oméga 3	2074	1273	2706	-39%	30%
EPA	604	447	715	-26%	18%
DHA	931	615	1147	-34%	23%



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CANNED MACKERELS IN WHITE WINE	Average	minimum	maximum	variation	
Oméga 6	420	383	488	-9%	16%
Oméga 3	2457	2116	3192	-14%	30%
EPA	624	516	855	-17%	37%
DHA	1045	875	1393	-16%	33%

SMOCKED TROUT	Average	minimum	maximum	variation	
Oméga 6	846	510	1161	-40%	37%
Oméga 3	1997	1275	2431	-36%	22%
EPA	502	312	-	-38%	/
DHA	831	495	1038	-40%	25%

Processed fishery products need a wide tolerance for total fat, especially for fatty fishes.

AIPCE-CEP proposes tolerances for omega 3 (including EPA and DHA) and omega 6 of [-45% ; + 45%].