

Whole body proximate, amino acid, fatty acid and elemental composition of Atlantic salmon (*Salmo salar*) at harvest size from commercial farming in Norway

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Salmon fed commercial feeds, sampled from commercial productions and harvest through 2017, show an average content of (g/100 g): protein, 16.9; lipid, 21.5; ash, 1.8; lysine, 1.20; methionine, 0.45 and (mg/kg) phosphorus, 3101; calcium, 3274; zinc, 35 in whole fish. Compared to harvest sized whole fish data presented by Shearer et al., (1994) the lipid level is slightly higher and ash content slightly lower but similar to values given by Ytrestøyl et al., (2015).

Harvest sized whole fish composition

There are few data available on whole fish composition of average harvest size from the salmon industry. Both feed composition, the genetic material of fish and management of production are changing (Ytrestøyl et al., 2015, Gjedrem, 2000). Data from field experiments also indicate that difference in chemical composition may exist depending on location, time of year and feed content. Feed resources needed for culturing salmon is primarily determined by the composition of the fish and the losses the fish has related to digestion and metabolism. Many of an animal's nutrient requirements can be calculated if the composition of body mass added through growth, the maintenance requirement, and utilization of the specific dietary nutrient is known.

Table 1. Chemical content in average harvest sized Atlantic salmon in Norway 2017.

Proximates (g or MJ/ kg, As is)									
Dry matter	Energy	N x 6.25	Lipid 1)	Ash	Sum AA				
409	12.71	169	215	18	135				
Amino acids, essentials (dehydrated g/ kg, As is)									
Met	Thr	Val	Ile	Leu	Phe	His	Lys	Arg	Trp
4.5	6.1	7.5	6.1	10.1	6.2	3.8	12.0	9.1	1.6
Amino acids, nonessentials (dehydrated g/ kg, As is)									
Cys	Tau	Asp	Ser	Glu	Gly	Ala	Tyr	Pro	
1.4	1.1	13.3	5.5	19.8	9.1	8.4	4.8	6.0	
Fatty acids (g/ kg, As is)									
18:1n-9	18:2n-6	18:3n-3	20:1n-9	20:5n-3	22:6n-3	Σ sat.	Σn-3	Σn-6	Σn-3/Σn-6
67.7	24.2	11.4	7.4	4.4	7.2	25.9	27.0	28.0	0.96
Elements (mg/ kg, As is)									
Ca	P	K	Na	Mg	Zn	Fe	Cu	Mn	Mo
3274	3101	2730	775	253	35	21	2.6	1.5	0.12

1) Soxhlet

References

- Gjedrem, T. 2000. Genetic improvement of cold-water fish species. *Aquaculture Research*. 31, 25-33.
Shearer, K.D., Åsgård, T., Andorsdottir, G., Aas, G.H., 1994. Whole body elemental and proximate composition of Atlantic salmon (*Salmo salar*) during the life cycle. *J. Fish. Biol.* 44, 785-797. Ytrestøyl, T., Aas, T.S., Åsgård, T., 2015. Utilisation of feed resources in production of Atlantic salmon (*Salmo salar*) in Norway. *Aquaculture* 448, 365-374.