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AQUAFARM

FATTY ACID COMPOSITION OF OVARIAN FAT AND OVARY OF FARMED RUSSIAN STURGEON (*Acipenser gueldenstaedtii*)

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INTRODUCTION

The deposition and proliferation of adipose tissue in the ovaries of mature female sturgeons is one of the most recent issues in caviar production. Lean ovaries tend to produce a greater yield of a superior quality caviar than those with high lipid tissue proliferation. In addition, the excess of adipose tissue in the ovary cause complications during the processing and separation of eggs from ovarian stroma.

OBJECTIVES

The aim of present preliminary research was to evaluate the fatty acid composition of samples of ovarian adipose tissue and compare them with the fatty acid composition of eggs of Russian sturgeon.

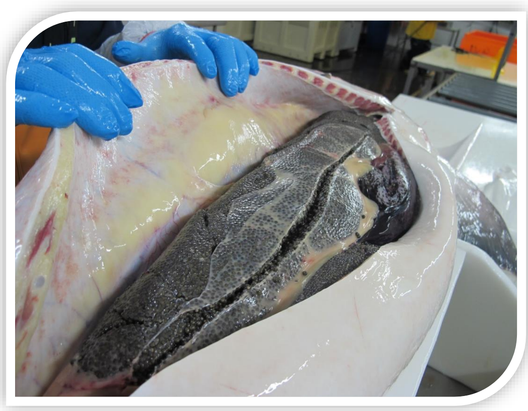
MATERIAL and METHODS

1. Five samples of Russian sturgeon ovarian residues obtained after eggs separation
2. Five samples of Russian sturgeon eggs obtained after washing

- Lipid extraction according to Folch (1956)
- Fatty acids methyl-esters preparation according to Christie (1982)
- Fatty acids analysis by capillary gas-chromatography.
- Statistic analysis: ANOVA by SPSS Statistics, v. 25; significance < 0,05

Source: https://bigpicture.ru/wp-content/uploads/2011/12/13137.jpg

Source: https://www.ufrgs.br/ictio/wp-content/uploads/2018/11/finaljpg.jpg



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RESULTS

	Ovaries residues	Eggs		Ovaries residues	Eggs
14:0	2,01^{a}±0,65	1,13^{b}±0,07	**20:1n-11**	0,40^{a}±0,07	0,13^{b}±0,01
15:0	0,20±0,01	0,21±0,00	**20:1 n-9**	1,62^{a}±0,18	0,91^{b}±0,06
16:0	13,76±0,43	16,14±0,23	**22:1 n-9**	0,12±0,12	0,00±0,00
16:1 n-7	2,84±0,78	2,72±0,04	**20:2 n-6**	0,79^{a}±0,12	0,67^{a}±0,02
17:0	0,30^{a}±0,05	0,35^{a}±0,01	**20:3 n-6**	0,61±0,45	0,57±0,02
16:2 n-4	0,14^{a}±0,12	0,15^{a}±0,02	**20:4 n-6**	1,16±0,85	1,54±0,07
17:1	0,35±0,28	0,25±0,01	**20:3 n-3**	0,18±0,01	0,20±0,00
16:3 n-4	0,10^{a}±0,09	0,00^{b}±0,00	**22:1 n-11**	0,71^{a}±0,10	0,54^{b}±0,01
18:0	3,02±1,22	2,98±0,11	**22:1 n-9**	0,20^{a}±0,03	0,06^{b}±0,05
18:1 n-	37,04±1,81	30,03±0,61	**20:5 n-3**	2,51^{a}±0,54	3,88^{b}±0,11
18:1 n-7	2,73±0,10	2,68±0,02	**22:5 n-3**	1,11^{a}±0,23	1,24^{a}±0,03
18:2 n-6	20,74^{a}±2,12	20,14^{a}±0,11	**22:6 n-3**	3,88^{a}±1,98	9,03^{b}±0,37
18:2 n-4	0,03^{a}±0,06	0,14^{b}±0,00	**SFA**	19,40±0,85	20,82±0,28
18:3 n-6	0,52^{a}±0,24	1,14^{b}±0,05	**MUFA**	46,04^{a}±2,64	37,33^{b}±0,72
18:3 n-4	0,09^{a}±0,08	0,15^{b}±0,00	**PUFA**	34,57^{a}±1,93	41,85^{b}±0,45
18:3 n-3	2,39±0,41	2,55±0,02	**n3**	10,41^{a}±2,47	17,35^{b}±0,45
20:0	0,10±0,09	0,00±0,00	**n6**	23,81^{a}±0,59	24,07^{a}±0,03
18:4 n-3	0,33^{a}±0,06	0,45^{a}±0,01	**n3/n6**	0,44^{a}±0,11	0,72^{b}±0,02

CONCLUSIONS

- A general prevalence of unsaturated fatty acids in both the matrices.
- MUFAs, in particular oleic acid (18:1 n-9), in higher concentration in ovarian tissue than in eggs.
- Higher values of long chain PUFAs (in particular EPA and DHA) in eggs.
- n3/n6 ratio higher in eggs samples.

Results showed than some fatty acids were stored mainly in ovarian fat tissue and were less included in oocytes, suggesting that the problem of fat ovaries could be also linked to the fatty acid composition of the diet. Further studies are needed to investigate the correlation between the fatty acid composition of the diet and the ovarian fat deposition.