COMPARATIVE FATTY ACIDS PROFILES OF *FLEXOPECTEN GLABER* DIGESTIVE GLAND UNDER STARVATION AND MONOALGAL DIET CONDITIONS

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Abstract
The starvation effects on the fatty acids composition of the digestive gland of the scallop *Flexopecten glaber* were underwent in this study. Results show that food deprivation induces a diminution of the amounts of the EPA (C20:5*n*-3) and the DHA (C22:6*n*-3) as well as the *n*-3/*n*-6 ratio. Meanwhile, a selective retention, in terms of increase of percentage, of the AA (C20:4*n*-6) in unfed specimens is recorded.
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Introduction
In scallops, the digestive gland is the most important organ involved in lipids reserve storage [1, 2]. The fatty acids composition of the digestive gland essentially depend on the food availability [3]. In this study we compared the fatty acids profile of the digestive gland of *Flexopecten glaber* under two nutritional conditions to asses the effects of the food deprivation on fatty acids composition of this organ.

Materiel and Methods
Tow groups of 6 individuals of *F. glaber* were acclimated for 3 weeks at constant temperature (15°C) and salinity (35 psu). The first lot was fed a monoalgal diet based on *Isochrysis galbana*; whereas the second group was starving. Total lipids were extracted according to the Folch method [4]. Fatty acid methyl esters were obtained according to [5] and analyzed by a HP 6890 gas chromatograph. Statistical analyses were carried out using the software-program Statistica 6.0. Data were analyzed for significant differences of means and inspected by Duncan test at the level of 5%.

Results and discussion
Results, reported on the table 1, show that under food deprivation the Saturated Fatty Acids decrease in general; the most pertinent diminutions concern, however, the Myristic acid (C14:0), the Palmitic acid (C16:0) and the Stearic acid (C18:0). Also, under the same starvation condition, a significant decrease of the *n-3* polyunsaturated fatty acids is recorded (from 23.45% in the fed lot to 7.52% in the unfed lot). Oppositely, an elevation of the *n*-6 polyunsaturated fatty acids is observed (from 4% to 19.42% respectively). Consequently, the deprivation effect is the decrease of the *n*-3/*n*-6 ratio. Within the Polyunsaturated Fatty Acids decrease trend, the most important starvation effects are observed for EPA (C20:5*n*-3) and DHA (C22:6*n*-3) amounts. Contradictory, the amount of AA (C20:4*n*-6) is maintained at significantly higher level. This phenomenon of selective retention of the ALA, which is involved in the prostaglandin synthesis [6], would correspond to a survival strategy and a mean to stand starvation stress adopted by the mollusk. Similar results were recorded in neutral lipids of starved mussels [7].

Tab. 1. Fatty acids percentages in the digestive gland of *F. glaber* starving and fed on monalgal diet conditions. ΣSFA: total saturated fatty acids; ΣMUFA: total monounsaturated fatty acids; ΣPUFA: total polyunsaturated fatty acids

Fatty acids	Digestive gland	
	Starving	Fed
	Mean ±S.D	Mean ±S.D
C14:0	3.46±0.14	7.19±0.28
C14:1	0.81±0.09	0.40±0.01
C15:0	2.57±0.17	1.89±0.01
C15:1	2.09±0.26	1.01±0.04
C16:0	3.67±0.34	19.16±0.82
C16:1n-9	0.31±0.03	2.54±0.03
C16:2	0.33±0.05	0.57±0.02
C17:0	0.28±0.03	0.56±0.01
C16:3	0.88±0.21	1.31±0.01
C16:4	1.14±0.12	1.81±0.01
C18:0	1.23±0.16	18.47±0.47
C18:1*n*-9	0.40±0.06	2.18±0.18
C18:1*n*-7	-	1.80±0.02
C18:2*n*-6	0.34±0.04	0.64±0.01
C18:3*n*-3	0.20±0.04	0.70±0.01
C18:4*n*-3	0.20±0.03	2.24±0.08
C20:0	0.13±0.03	1.27±0.18
C20:1	0.10±0.01	1.24±0.12
C20:2*n*-6	0.20±0.02	0.15±0.11
C20:3*n*-6	0.49±0.06	0.62±0.29
C20:4*n*-6	3.85±0.41	1.82±0.37
C20:3*n*-3	0.20±0.01	0.22±0.04
C20:4*n*-3	0.38±0.03	3.00±0.23
C20:5*n*-3	0.40±0.04	7.08±0.25
C22:0	0.34±0.02	0.40±0.11
C22:1	0.54±0.07	-
C21:5	0.32±0.12	0.23±0.02
C22:2*n*-6	0.08±0.03	0.18±0.08
C22:3*n*-3	0.15±0.10	0.73±0.13
C22:5*n*-3	0.13±0.04	0.29±0.03
C22:6*n*-3	0.28±0.11	5.78±0.75
∑SFA	45.90±1.55	57.26±2.16
∑MUFA	16.68±0.26	10.72±0.25
∑PUFA	37.42±1.37	32.02±1.91
∑*n*-3	7.52±0.76	23.45±1.77
∑n-6	19.42±0.23	4.00±0.13
n-3/*n*-6	0.39±0.03	5.86±0.25

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