LIPID COMPOSITION OF COMMON OCTOPUS (*Octopus vulgaris*) PARALARVAE FED WITH ALTERNATIVE PREYS AND A MICRODIET.

I. García-Herrero[1], D. Reis[2], C. Rodríguez[1], R. Riera[3], A.V. Sykes[2], B.C. Felipe[4], V. Martín[4], J.E. Villamandos[4], E. Almansa[4]

[1]Laboratorio de Fisiología Animal, Facultad de Biología, Universidad de La Laguna, 38206. Tenerife, Spain. [2]CCMAR-CIMAR L.A., Campus de Gambelas, Faculdade de Ciéncias e Tecnologia, Universidade do Algarve, 8005-139, Faro, Portugal. [3]CIMA SL, Arzobispo Elías Yanes, 44, 38206 La Laguna, Santa Cruz de Tenerife, Canary Islands, Spain. [4]IEO, Centro Oceanográfico de Canarias. C/ Gral. Gutiérrez Nº4, C.P. 38003. Santa Cruz de Tenerife, Spain . eduardo.almansa@ca.ieo.es

INTRODUCTION

The common octopus (*Octopus vulgaris*) is a promising cephalopod species for aquaculture. However, its planktonic stage (paralarvae) is identified as the largest bottleneck due to the inexistence of a suitable diet. Decapod crustacean zoeae have been described as *O. vulgaris* natural prey (Villanueva & Norman 2008) and the best rearing results have been obtained with *Maja sp* zoeae and A*rtemia* sp. juveniles (1.5 mm) enriched with phytoplankton (Iglesias et al*.,* 2007). Nonetheless, zoeae of *Palaemon elegans* and *Grapsus grapsus* might be adequate as first preys due to their size and nutritional composition. On the other hand, a commercial frozen crustacean, Cyclops (3F Frozen Fish Food Company) used as base of an alginate-inert diet could also be tested as an alternative diet for *Octopus* paralarvae.

OBJECTIVE

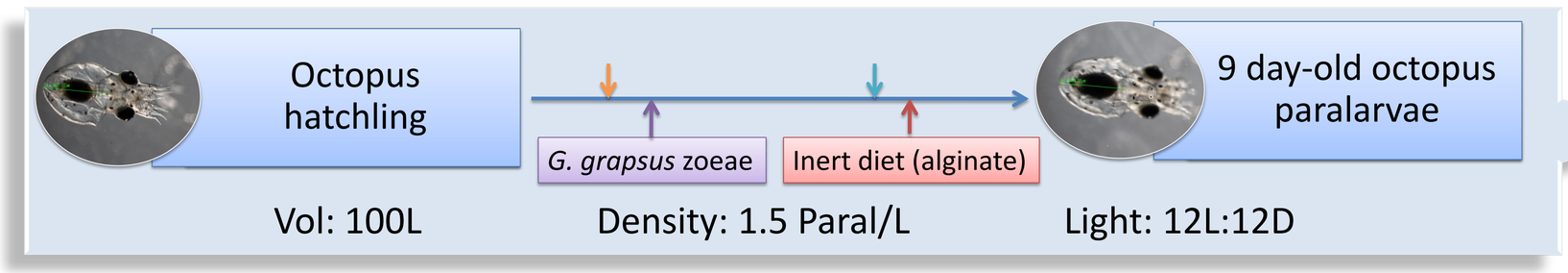
➢To evaluate the effect of several live preys (*Artemia* sp. juveniles, *P. elegans* and *G. grapsus* zoeae) and one inert diet (Cyclops and alginate) on the lipid composition of 9 day-old *O. vulgaris* paralarvae.

CONCLUSIONS

➢After only nine days of feeding with live preys and inert diet a notable shifting of octopus paralarvae lipid profile was observed.

➢Regardless of the diet provided, there was a significant reduction in phosphatidylethanolamine (PE), 22:6n-3 (DHA) and 22:6n-3/20:5n-3 ratio. 20:4n-6 (AA) and sterol esters (SE) were particularly important in *G. grapsus* feeding.

MATERIAL AND METHODS



Lipid analysis

- Total Lipid (Christie,1982)
- Lipid class composition (Olsen & Henderson,1989)
- Fatty acid composition (Christie,1982)

RESULTS

Table 1. Moisture, Total lipid and Lipid class (LC) composition of fed paralarvae.
PC: Phosphatidylcholine PS: Phosphatidylserine.PI: Phosphatidylinositol PG: phosphoglycerides PE: Phosphatidylethanolamine. CHO: Cholesterol TAG: Triacylglycerides SE: sterol esters.

	Hatchling	*Artemia sp.*	Inert Diet	*G. grapsus*	*P. elegans*
Moisture	74.7 ± 2.3	79.0 ± 0.5	77.5 ± 4.1	74.8 ± 4.0	78.2 ± 0.7
Total Lipid	6.1 ± 0.8	10.7 ± 1.5	10.5 ± 3.8	10.8 ± 2.6	10.0 ± 1.7
PC	13.2 ± 0.6 b	15.2 ± 2.6 b	15.3 ± 1.8 b	16.1 ± 1.4 ab	19.2 ± 0.2 a
PS	10.8 ± 0.7	8.6 ± 3.5	8.0 ± 2.2	6.7 ± 1.2	8.8 ± 1.6
PI	3.6 ± 0.8	2.9 ± 1.4	3.0 ± 2.1	2.6 ± 1.3	3.7 ± 1.7
PG	4.1 ± 1.5	3.9 ± 1.3	4.2 ± 1.4	2.7 ± 0.5	4.2 ± 0.3
PE	32.7 ± 1.1 a	17.3 ± 2.4 b	15.6 ± 0.4 b	15.3 ± 0.6 b	17.7 ± 2.1 b
CHO	32.3 ± 1.7 ab	34.3 ± 4.0 a	33.8 ± 4.0 a	26.3 ± 0.7 c	27.1 ± 2.9 bc
TAG	0.6 ± 0.2 b	2.8 ± 1.0 ab	5.6 ± 2.1 a	5.9 ± 2.3 a	5.8 ± 2.0 a
SE	1.2 ± 0.2 c	13.4 ± 4.0 c	10.6 ± 0.7 b	21.7 ± 1.7 a	11.6 ± 0.6 b

Different letters indicate significant differences p<0.05

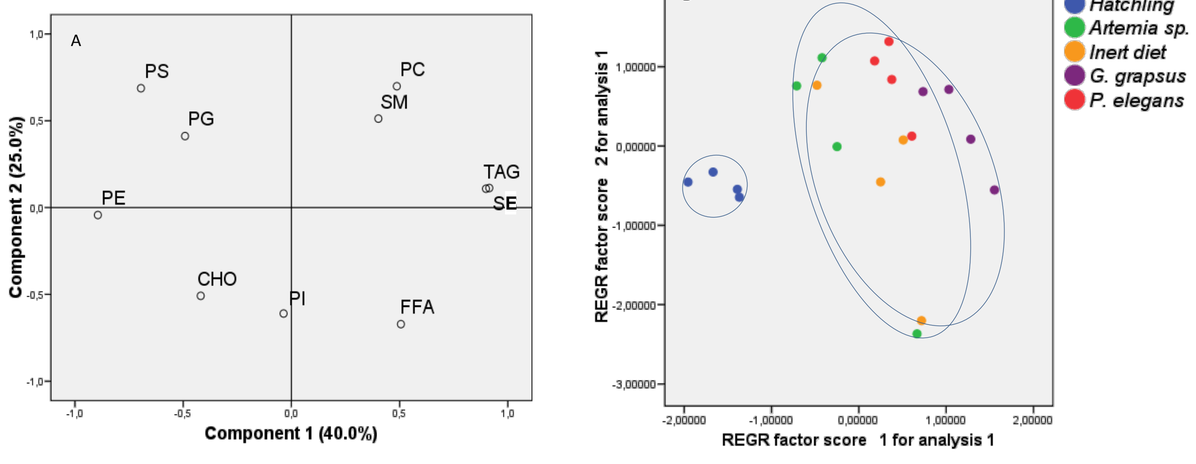


Figure 1. Component plot (A) and factor score plots (B) of PCA for the LC composition of paralarvae. Ellipsis stand for different clusters in the factor score 1 (B).

Table 2. Fatty acid (FA) composition of fed paralarvae.

	Hatchling	*Artemia* sp.	Inert Diet	*G. grapsus*	*P. elegans*
16: 0	21.1 ± 0.6 a	17.8 ± 1.2 b	17.7 ± 0.3 b	19.6 ± 0.2 ab	19.2 ± 1.2 ab
18: 0	9.4 ± 0.1 c	13.9 ± 0.4 a	13.8 ± 0.2 a	12.1 ± 0.2 b	11.5 ± 0.7 b
18: 1 n-9	2.1 ± 0.0 b	6.1 ± 0.7 a	6.5 ± 1.2 a	6.1 ± 0.6 a	5.3 ± 0.1 a
18: 1 n-7	1.1 ± 0.0 c	3.8 ± 0.8 ab	4.7 ± 0.6 a	3.2 ± 0.3 b	4.0 ± 0.3 ab
18: 2 n-6	0.4 ± 0.0 b	1.9 ± 0.7 a	1.9 ± 0.2 a	1.6 ± 0.6 a	1.3 ± 0.1 a
18: 3 n-3	0.0 ± 0.0 d	2.9 ± 0.5 a	3.4 ± 0.4 a	0.6 ± 0.3 c	1.4 ± 0.2 b
20: 1	4.0 ± 0.1 a	3.2 ± 0.3 b	3.1 ± 0.1 b	2.5 ± 0.1 c	2.4 ± 0.3 c
20: 4 n-6 (AA)	4.6 ± 0.1 c	4.7 ± 0.7 c	4.2 ± 0.4 c	12.7 ± 0.8 a	6.3 ± 0.5 b
20: 5 n-3 (EPA)	17.1 ± 0.2 a	16.8 ± 1.7 a	17.2 ± 0.4 a	12.0 ± 0.1 b	16.3 ± 0.6 a
22: 6 n-3 (DHA)	26.5 ± 0.4 a	14.8 ± 2.3 bc	14.2 ± 0.8 c	14.6 ± 0.7 c	17.8 ± 0.8 b
Saturates	32.6 ± 0.8	34.2 ± 1.7	33.7 ± 0.4	34.5 ± 0.3	33.6 ± 1.8
Monoenes	10.7 ± 0.2 b	16.6 ± 1.0 a	17.1 ± 1.8 a	16.0 ± 0.6 a	15.8 ± 1.0 a
n-3	46.7 ± 0.6 a	38.9 ± 3.2 b	39.3 ± 1.3 b	30.6 ± 0.5 c	38.8 ± 0.5 b
n-6	5.4 ± 0.1 d	7.7 ± 0.6 c	7.2 ± 0.5 c	16.7 ± 0.4 a	9.0 ± 0.6 b
n-3/n6	8.7 ± 0.1 a	5.1 ± 0.6 bc	5.5 ± 0.2 b	1.8 ± 0.0 d	4.3 ± 0.4 c
DHA/EPA	1.6 ± 0.0 a	0.9 ± 0.1 c	0.8 ± 0.0 c	1.2 ± 0.1 b	1.1 ± 0.1 b
EPA/AA	3.7 ± 0.0 a	3.6 ± 0.3 a	4.1 ± 0.3 a	1.0 ± 0.1 c	2.6 ± 0.3 b

Footnotes as in Table 1.

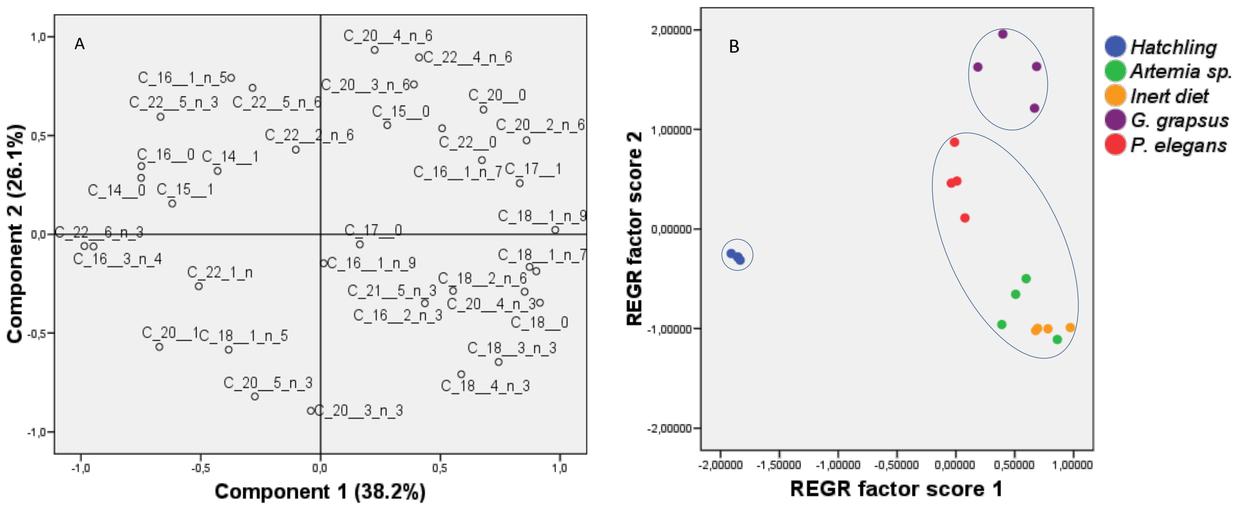


Figure 2. Component plot (A) and factor score plots (B) of the PCA for the FA composition of paralarvae. Ellipsis stand for different clusters in the factor score 1 (B).

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