Lipid and fatty acid composition of cuttlefish (*Sepia officinalis*) of different ages fed with shrimp and fish fry

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INTRODUCTION AND OBJECTIVES

The cuttlefish (*Sepia officinalis*) is characterized by a short life cycle, fast growth rates and relatively easy reproduction in captivity. These characteristics make cuttlefish a promising animal for commercial aquaculture (Lee et al., 1998). In previous experiments, cuttlefish has been fed with live or frozen prey such as fish or crustaceans. Several authors have reported lower growth and survival when using fish compared to when crustacean are used (Domingues et al., 2004). On the other hand, in the wild, cuttlefish are known to change their diet, with the importance of fish increasing and crustacean decreasing, as they grow (Castro and Guerra, 1990).

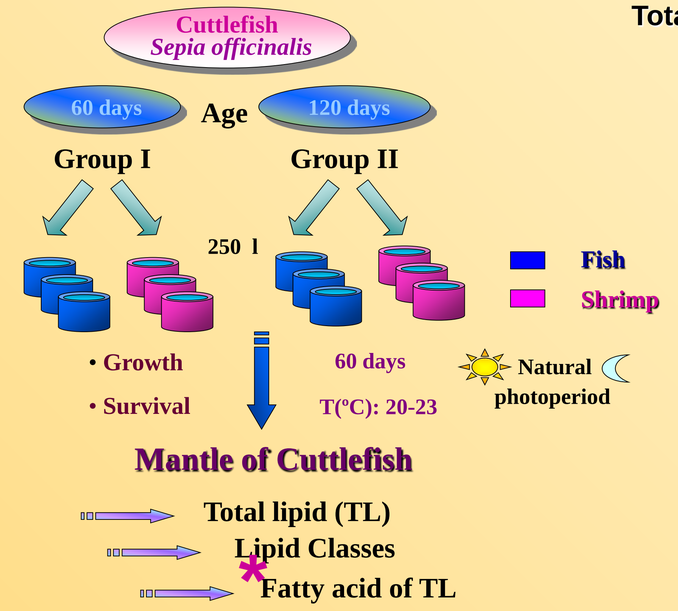
In the present study, cuttlefish of 60-day-old (Group I) and 120-day-old (Group II) were fed with shrimp and fish fry to determine the effects of these preys on growth after 60 days. Lipid composition of the different prey and mantle of cuttlefish from both groups was analyzed in order to get a better evaluation of dietary sources and their effects on the final composition of cuttlefish mantle.

GROWTH

Diet	Age-Group I			Age-Group II		
	Initial Weight (g)	Final Weight (g)	Growth Rate[1]	Initial Weight (g)	Final Weight (g)	Growth Rate[1]
Fish fry	12,9 ± 2,8	35,0 ± 3,9	1,7	86,2 ± 8,6	155,4 ± 22,7	1,0
Shrimp	13,3 ± 3,4	85,6 ± 11,1	3,1	85,6 ± 11,7	300,4 ± 44,9	2,1
*P**	*0,417*	*0,000*		*0,463*	*0,000*	

* t-Student shrimp *versus* fish; [1] % Body weight ·day^{-1}

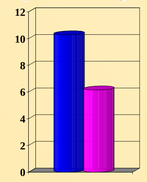
MATERIAL AND METHODS



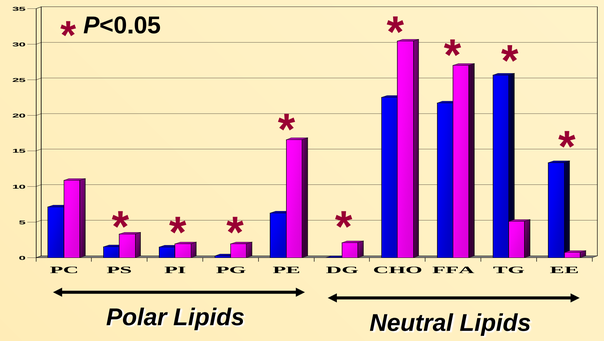
Lipid analysis according to Christie, W. (1982). 2nd edition. Pergamon Press. Oxford

DIET COMPOSITION

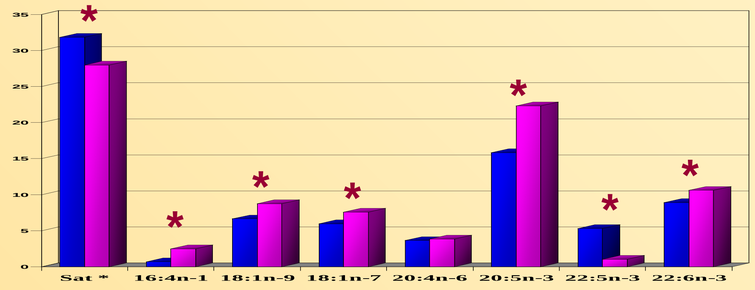
Total Lipid content (%DWB)



Lipid Classes (%)



Fatty Acid of TL (% weight)

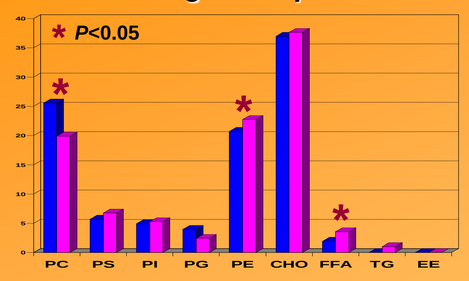


*Sat: Saturates fatty acids

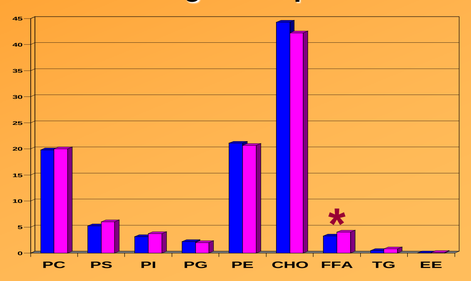
CUTTLEFISH MANTLE COMPOSITION

Lipid classes composition of cuttlefish mantle (%)

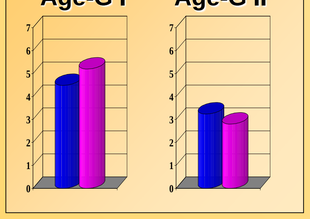
Age-Group I



Age-Group II

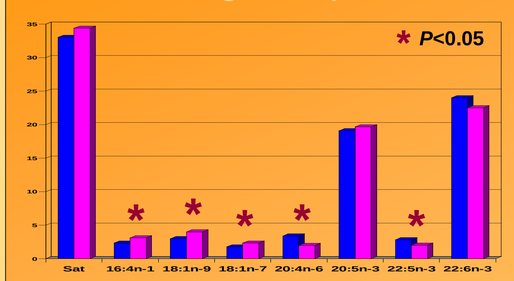


Total Lipid content (%DWB)

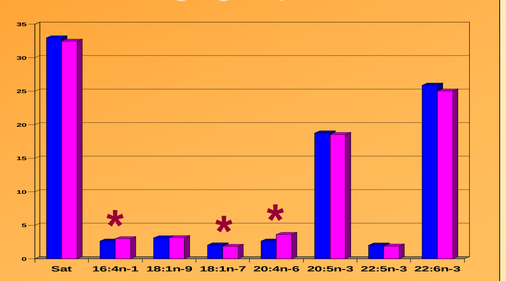


Fatty acid composition of cuttlefish mantle (% weight)

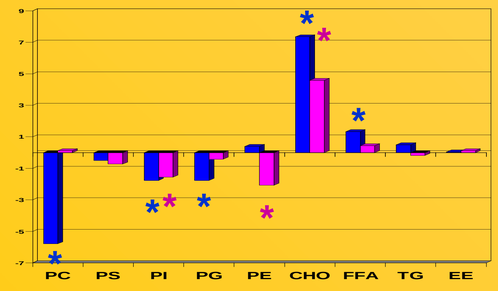
Age-Group I



Age-group II



Lipid class differences between age-group I and II in both dietary treatments (%)



* *P*<0.05 Shrimp
* *P*<0.05 Fish

CONCLUSIONS

After 60 days of feeding, the most noteworthy difference was the higher growth observed in shrimp-fed cuttlefish respect to fish-fed cuttlefish in both age-groups

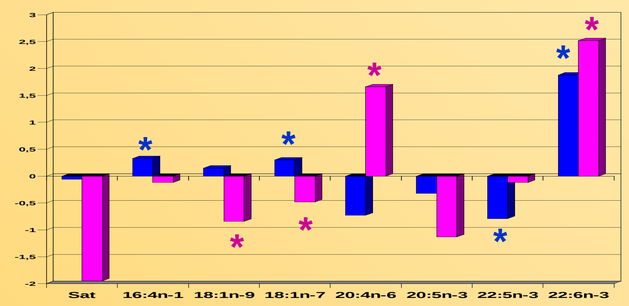
Despite of the different lipid classes profiles of both diets, cuttlefish mantle lipid composition did not reflect these differences between both groups. Nevertheless, older cuttlefish showed less differences compared to younger ones

20:5n-3 and 22:6n-3 fatty acid maintained similar values in shrimp-fed and fish-fed cuttlefish despite of the different content of these fatty acid in both diets

Both for fish-fed and shrimp-fed cuttlefish there was a common tendency to lose polar lipids on behalf of neutral lipids, especially cholesterol, when the cuttlefish get older.

Sepia officinalis L. 1758

Fatty acid differences between age-group I and II in both dietary treatments (% weight)



* *P*<0.05 Shrimp
* *P*<0.05 Fish

References

Domingues et al., (2004) Aquaculture 229: 239-254

Lee et al., (1998) Suisan Zoshoku 46: 417-422

Castro and Guerra (1990) Scientia Marina 54: 375-388