

***In vivo* Metabolism of Unsaturated Fatty Acids and Lipid Classes in
Octopus vulgaris Hatchlings**

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Abstract

The *in vivo* capability of *Octopus vulgaris* hatchlings to metabolize fatty acids (FA) and lipid classes (LC) was studied. Hatchlings were incubated in 10 ml of seawater with 0.3 μ M of [1-¹⁴C]-labelled FA: 18:1n-9, 18:2n-6, 18:3n-3, 20:4n-6, 20:5n-3 or 22:3n-6, and radiolabelled LC: phosphatidylcholine, L- α -1-palmitoyl-2-arachidonyl-[arachidonyl-1-¹⁴C] or phosphatidylethanolamine, L- α -1-palmitoyl-2-arachidonyl-[arachidonyl-1-¹⁴C]. Hatchlings possess the ability to incorporate FA from seawater and to esterify them with marked specificity. ARA and EPA were mostly esterified into phosphatidylethanolamine, while the esterification of C18 FA and DHA, occurred mainly into phosphatidylcholine. Higher incorporation of C18 FA into triacylglycerols was also observed. Hatchlings were able to elongate all substrates, but no desaturation capacity was recorded. ARA was the most incorporated and the least transformed FA. Both LC were similarly incorporated. Although [1-¹⁴C]ARA was present in both phosphatidylcholine or phosphatidylethanolamine, after incubation more than 50% of radioactive ARA was esterified into phosphatidylethanolamine, in agreement with findings described for ARA esterification pattern. The present results should be taken into account in octopus nutrition particularly considering that endogenous metabolism of live preys compromises the availability of essential FA for paralarvae.