Feeding behaviour and differential absorption of nutrients in mussel *Mytilus galloprovincialis*: Responses to three microalgae diets

María José Fernández-Reiriz, Jade Irisarri, Uxio Labarta

PII: S0044-8486(15)00239-2
DOI: doi: 10.1016/j.aquaculture.2015.04.025
Reference: AQUA 631641

To appear in: *Aquaculture*

Received date: 5 March 2015
Revised date: 17 April 2015
Accepted date: 20 April 2015

Please cite this article as: Fernández-Reiriz, María José, Irisarri, Jade, Labarta, Uxio, Feeding behaviour and differential absorption of nutrients in mussel *Mytilus galloprovincialis*: Responses to three microalgae diets, *Aquaculture* (2015), doi: 10.1016/j.aquaculture.2015.04.025

Feeding behaviour and differential absorption of nutrients in mussel *Mytilus galloprovincialis*: responses to three microalgae diets

María José Fernández-Reiriz[a*], Jade Irisarri[a], Uxio Labarta[a]

[a] Consejo Superior de Investigaciones Científicas (CSIC), Instituto de Investigaciones Marinas (IIM), C/Eduardo Cabello 6, 36208 Vigo, Spain

*Corresponding author. Tel.: +34 986231930, fax: +34 986292762. E-mail address: mjreiriz@iim.csic.es (M.J. Fernández-Reiriz)

Abstract

We aimed to evaluate three defined monoalgal diets, *Isochrysis galbana* clone T-ISO, *Tetraselmis suecica* and *Rhodomonas lens*, as a food source for *Mytilus galloprovincialis*, to ascertain which of the diets maximized the feeding, digestion and the assimilatory balance of nutrients and energy. Mussels fed with *Rhodomonas* yielded the highest clearance and ingestion rates (CR and IR), suggesting that the dimensions of *Tetraselmis* and T-ISO might have restricted their capture by the mussels' gill. The absorption efficiency (AE), an indicator of digestibility, was significantly higher for *Rhodomonas* (69.6%) than for *Tetraselmis* (38.4%) or T-ISO (23.6%) diets. This could be explained by the greater proportion of refractive non-digestible material contained in *Tetraselmis* and T-ISO diets, together with the low digestibility of the cell wall of *Tetraselmis*. The *Rhodomonas* diet showed the highest protein content, which was reflected in the highest ingestion and absorption of proteins compared with the other diets. However, the amount of carbohydrates and lipids ingested did not match the amount absorbed, probably owing to inefficient carbohydrate digestion and lipids lost through metabolic fecal losses. The total energy absorbed was higher for *Rhodomonas* (34.5 Jh^{-1}) than for T-ISO (20.1 J h^{-1}) or *Tetraselmis* (13.9 J h^{-1}) diets. The optimal feeding and digestive behaviour obtained for mussels fed with *Rhodomonas* diet, coupled with its ideal size, volume, weight and biochemical composition, might provide a