

**STUDIES ON THE CHARACTERISATION OF BIOMARKERS OF NUTRITIONALLY-
DERIVED STRESS IN PARALARVAL CULTURES OF THE COMMON OCTOPUS
(*Octopus vulgaris*)**

I. Varó¹, J.C. Navarro¹, J. Iglesias², J.J. Otero², J. Sánchez², E. Almansa³, O. Monroig¹, F. Hontoria¹,
A.E. Morales⁴, A. Pérez-Giménez⁴, M.C. Hidalgo⁴, G. Cardenete⁴

¹ Instituto de Acuicultura Torre de la Sal. (IATS-CSIC), 12595 Ribera de Cabanes, Spain

² Instituto Español de Oceanografía, Centro Oceanográfico de Vigo, Apartado 1552, 36200 Vigo, Spain

³ Instituto Español de Oceanografía, Centro Oceanográfico de Canarias, Avd. Tres de Mayo 73, 38005 Santa Cruz de Tenerife, Spain

⁴ Departamento de Zoología, Universidad de Granada, Campus de Fuentenueva, 18071 Granada, Spain

Due to the high mortality within the first 30 days of life, octopus paralarvae culture represents the main obstacle for its commercial production. The causes of such mortality are not yet well defined and understood. As a part of a broader project aimed at characterising the causes of such massive mortality, we envisaged the study of nutritionally-derived stress, through the selection of biomarkers capable of its detection and quantification. Paralarval cultures either starved, or fed *Nannochloropsis* sp - and *Isochrysis galbana* - enriched *Artemia*, or *Artemia* plus crustacean zoeae (*Maja* sp.), were raised up in 500 l tanks until the outburst of massive mortalities. The following biomarkers were analysed: RNA/DNA, stress protein Hsp70, activities of superoxide dismutase (SOD), catalase (CAT), glutathione reductase (GR), Total and Se-dependent glutathione peroxidase (GPX, Se-GPX), the isozymic pattern of SOD, and the levels of malondialdehyde (MDA). The results point at the RNA/DNA ratio as an indicator of starvation, and at the levels of HSP70 and Se-GPX activity as more sensitive biomarkers of the nutritional status. There is not evidence of a prooxidative status promoted by diets, but a detailed analysis of oxidative damage to proteins could help to associate oxidative damage to mortalities and growth.