

Effects of nitrogen starvation on the pigment content and chemical composition of *Rhodomonas* sp. Hf-1 strain

Yamamoto Satoshi¹, Bossier Peter¹ and Yoshimatsu Takao²

¹ Universiteit Gent, Laboratorium voor Aquacultuur en Artemia Reference Center (UGent-ARC), UGent BW13, Coupure Links 653, Blok F, 9000 Gent, Belgium
E-mail: 517d302@m.mie-u.ac.jp

² Mie University, Graduate School of Bioresources, 1577 Kurimamachiya-cho Tsu City, Mie 514-8507, Japan

Species of the cryptophyte genus *Rhodomonas* have been well known as an excellent feed for some marine animals in aquaculture. In this study, effects of nitrogen starvation in culture medium on the pigment content and chemical composition of *Rhodomonas* sp. Hf-1 strain were examined. Two nitrate concentration of 0.9 mM (Low-N) and 3.5 mM (High-N) were supplemented to the medium, and the Hf-1 strain was cultured for 7 days.

In Low-N medium, the nitrate concentration in the medium was nearly exhausted on day 3, and the growth rate was significantly declined compared to High-N medium. The phycoerythrin and protein contents in the cells decreased by 75% and 30%, respectively, from day 3 to 7, whereas High-N medium showed few changes in these chemical compositions during the entire experiment. The major fatty acid in the cells in Low-N medium was poly-unsaturated fatty acid on day 3, which accounted for 37.4% of total fatty acid. However, this content reduced to 24.7% and the major fatty acid shifted to saturated fatty acid by the end of the experiment. On the other hand, the major fatty acid content in High-N medium was relatively abundant even on day 7 and still remained as the major fatty acid until the end of the experiment. These data indicate that nitrogen starvation in the medium greatly affect the nutritional value of cryptophytes.

Keywords: Microalgae; Nitrogen starvation; Biochemical composition; Aquaculture