

## **Bioconversion of Fish Hatchery Waste as Feed in the Production of Live Feed**

### **ABSTRACT**

Purple Non-Sulfur Bacteria (PNSB), also known as phototrophic bacteria are widely distributed in both freshwater and marine environment and capable to grow in wide range of substrates. In this study, Bacterium *Rhodobacter sphaeroides* strain UMS2, a freshwater isolate was used in this study in utilization of fish hatchery waste. This study was conducted to determine the nutritional values of bioprocess product that was grown in fish hatchery waste. Finally, the waste bio-converted product was used as feed supplement to monitor the growth performance of live feed *Tubifex* spp. Inoculum of *Rhodobacter sphaeroides* strain UMS2 was developed in 112 synthetic media and 48-h culture of 30% (v/v) inoculum was used in fish hatchery waste during the bioprocess. The nutritional values of bio-converted product, except total ash (%), were not significantly improved with 30% (v/v) inoculum of *Rhodobacter sphaeroides*, strain UMS2. Feeding trial in bloodworm (*Tubifex* spp.) with bioconversion product conducted for 15 days to monitor growth (w/v) of live feed. Initial growth  $1.42 \pm 0.001$  g/L of *Tubifex* spp. was stocked in  $15 \times 75 \times 15$  cm plastic tray connected with recirculated system. *Tubifex* spp. was observed to be comparatively higher ( $1.55 \pm 0.12$  g/L) while fed in the product that contained bacterium than the growth ( $1.44 \pm 0.15$  g/L) of *Tubifex* spp. fed in the bioconversion product of without bacterium. The inoculums size (30%) of bacterium not enough to support the growth of *Rhodobacter sphaeroides*, strain UMS2 in the bioconversion process to improve the nutritional values. However, while used as feed supplement it improved the growth performance of the *Tubifex* spp. So, bacterium *Rhodobacter sphaeroides*, strain UMS2 has potentiality to be used as feed supplement in the production of live feed.