

CHAPTER VI

SUMMARY AND RECOMMENDATION

Summary

1. The condition for promoting growth of *H. pluvialis* NIES144 was the incubation at 25 °C under 14 hr light (1.5-3 Klux) and 10 hr dark illumination cycle. Exposure under 10 klux light intensity continuously could produce a good amount of astaxanthin.

2. Stimulation of astaxanthin accumulation in *H. pluvialis* NIES144 by high light intensity showed better results than by high salinity concentration.

3. The highest survival rate of zoea, mysis and postlarva was found in shrimp fed algal astaxanthin-added diet, followed by natural food, synthetic astaxanthin-added diet and control diet, respectively.

4. The highest growth of shrimp larvae was observed in shrimp fed algal astaxanthin-added diet, followed by natural food, synthetic astaxanthin - added diet and control diet, respectively.

5. The highest astaxanthin accumulation occurred in shrimp fed natural food, followed by algal astaxanthin-added diet, synthetic astaxanthin-added diet and control diet, respectively.

6. The three stage of fed algal astaxanthin-added diet showed better survival rate, growth and salt tolerance than the larvae fed synthetic astaxanthin-added diet ($P < 0.05$). This suggested that natural astaxanthin has more efficiency on health improvement than the synthetic astaxanthin.

7. Algal astaxanthin-added diet (an artificial diet containing natural astaxanthin) can replace natural food (Chaetoceros sp. and Artemia sp.) for the culture of zoea, mysis and postlarvae of P. monodon.

8. Shrimp larvae fed algal astaxanthin-added diet could tolerate low salinity stress better than shrimp fed other diets.

Recommendation

1. Low light, low salinity and low temperature can promote better growth of H. pluvialis NIES144, however low temperature operation in tropical countries is energy consumption. Strain selection of H. pluvialis for high temperature growth needs to be developed.

2. Grinding cyst under cryogenic condition at temperature below about -50°C or -170°C and keeping under nitrogen gas is the suitable method to preserve astaxanthin.
3. Condition of high temperature, high oxygen concentration and high light should be avoided during the drying process of cysts.
4. Studying more about the preservation of astaxanthin in feed in order to keep good quality.
5. The pilot scale experiment in the hatchery or nursing farm may help the develop production of artificial diet more realistically.