Nirun Choosuan 2009: Effect of Carbondioxide Content on Growth of *Chaetoceros calcitrans* (Paulsen, 1905). Master of Science (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Ms. Suntraporn Limsakoon, M.S. 115 pages.

This experiment cultured *Chaetoceros calcitrans* with supplemented air (control), 2, 5 and 10 % CO_2 under laboratory conditions at room temperature 25 ^{o}C, light intensity 3,000 lux, 12-12 hrs of light-dark period, air flow rate 0.5 L/min and Conway medium. The resulting optimum CO_2 concentration was 2 %. The growth rate of *C. calcitrans* was 0.49±0.01 per day and doubling time was 1.42± 0.02 day. Cell density was 3.68±0.35 x10^6 cells/ml in exponential phase and 9.69±0.32 x10^6 cells/ml in stationary phase more than control in exponential phase (2.58±0.20 x10^6 cells/ml) and stationary phase (7.07±0.69 x10^6 cells/ml) were significantly different ($P<0.05$). Protein, total lipid, carbohydrate, EPA and DHA content among treatments were not significantly different ($P>0.05$). CO_2 concentration of 2 % supplemented 6 and 12 hrs for cultivation of *C. calcitrans* were not significantly different ($P>0.05$). The conclusion of this study showed that CO_2 concentration of 2 % supplemented for 6 hrs might be appropriate for cultivation of *C. calcitrans* in the laboratory. While experiment cultured *C. calcitrans* with many supplemented CO_2 concentration for mass cultivation. *C. calcitrans* was grown in Sato and Serikawa medium of 200 liter volume under conditions of air flow rate 2.5 L/min and light form the sun. The resulting optimum CO_2 concentration was 2 % for mass cultivation. The growth rate of *C. calcitrans* was 0.58±0.03 per day and doubling time was 1.20±0.07 day. Cell density was 1.05±1.01 x10^6 cells/ml more than control (0.783±0.70 x10^6 cells/ml) were significantly different ($P<0.05$) in exponential phase. Protein, total lipid, carbohydrate, ash, EPA and DHA content among treatments were not significantly different ($P>0.05$). CO_2 concentration of 2 % supplemented 6 and 9 hrs for mass cultivation of *C. calcitrans* were not significantly different ($P>0.05$). The conclusion of this study showed that CO_2 concentration of 2 % supplemented for 6 hrs might be appropriate for mass cultivation of *C. calcitrans* in accord with cultivation of *C. calcitrans* in the laboratory.

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