

不同生物量鲢鱼对铜绿微囊藻的生长和水质影响的研究

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摘要: 本试验在三种浓度的铜绿微囊藻水体中放养不同密度的鲢鱼, 探讨了不同生物量鲢鱼对铜绿微囊藻的生长和水质的影响。铜绿微囊藻的浓度为 5.00×10^3 ind/L (低)、 5.00×10^5 ind/L (中)、 5.00×10^7 ind/L (高), 在各个藻类浓度下, 分别投放 0 g/m³、300 g/m³、600 g/m³、900 g/m³、1200 g/m³ 的鲢鱼 (平均体重为 1.81 g), 饲养试验于室内水族箱内进行, 为期 4 周, 养殖期间水温为 27.0-33.0℃。每周测定藻细胞和叶绿素 a 含量, 以及水体中总氮、总磷浓度, 试验开始和结束时分别测定鲢鱼的体重。试验结果表明: (1) 藻细胞为低、中、高浓度时, 鲢鱼生物量分别为 300 g/m³、600 g/m³、900 g/m³ 的处理组中, 水体的藻浓度和叶绿素 a 浓度最低; 在各个藻浓度下, 随着鲢鱼生物量的增大, 水中总磷、总氮的含量均显著升高 ($P < 0.05$)。可见鲢鱼虽能较好地控制铜绿微囊藻的生长, 但不能同时有效地降低水体的总氮和总磷浓度。(2) 与对照组相比, 各试验组鲢鱼终体重显著下降 ($P < 0.05$), 提示单一的铜绿微囊藻不能满足鲢鱼保持收支平衡所需的物质和能量。

关键词: 鲢鱼; 铜绿微囊藻; 总氮; 总磷

Impact on growth of *Microcystis aeruginosa* and water quality by silver carp (*Hypophthalmichthys molitrix*) in aquarium indoor

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Abstract: A 4-week feeding experiments were carried out to evaluate the effects on the control of *Microcystis aeruginosa* and water quality by silver carp *Hypophthalmichthys Molitrix* with different stocking densities (0 g/m³, 300 g/m³, 600 g/m³, 900 g/m³ and 1200 g/m³). silver carp were reared in artificial water at 27.0-33.0℃ to feed *Microcystis aeruginosa* with different concentrations of algal cells (5.00×10^3 ind/L, 5.00×10^5 ind/L and 5.00×10^7 ind/L). The results showed that the smallest concentration of *Microcystis aeruginosa* and Chlorophyll a were observed among some treatment groups when stocking densities of silver carp was 300 g/m³, 600 g/m³ and 900 g/m³ respectively, at three levels of algae biomass. It was also found that total phosphorus (TP) and total nitrogen (TN) concentrations in water significant increased with increasing stocking densities of fish ($P < 0.05$) at the same time. Although silver carp can control the growth of *Microcystis aeruginosa* to some extent, it may not a effective means to significant decrease TN and TP concentrations in water. Besides, the final body weight of silver carp in all experiments groups was significantly lower than that of control group ($P < 0.05$).

Keywords: Silver carp; *Microcystis aeruginosa*; total nitroge; total phosphorus