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研究论文

营养胁迫下球形棕囊藻(Phaeocystis globosa Scherffel)的生长行为及溶血活性

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摘要 近年来，我国广东沿海连续出现大面积球形棕囊藻（Phaeocystis globosa Scherffel）赤潮，产生溶血毒素等有害物质，给当地的海洋养殖业造成重大的经济损失。研究不同的生长时期及半连续培养时不同营养盐胁迫下，球形棕囊藻溶血毒素的产生行为。结果显示，批量培养的球形棕囊藻处于生长平稳期末时，溶血活性最大((21±1)units/L)；半连续培养时，营养盐限制对球形棕囊藻的生长有明显的抑制作用，其中Fe3+及N盐限制影响最为明显。同时，营养盐限制也可促进棕囊藻溶血毒素的合成，其中Fe3+和-Mn2+的限制性时球形棕囊藻溶血活性显著增强。这些结果表明，球形棕囊藻溶血毒素的产生与藻细胞的生长可能受不同机制的调节，溶血毒素的合成可能是环境胁迫下棕囊藻维持生存的一种策略。

关键词 溶血物质；球形棕囊藻；营养限制

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Growth and hemolytic activities of *Phaeocystis globosa* Scherffel at different mutrients condition

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Abstract In this experiment, the productions of hemolytic substances of Phaeocystis globosa Scherffel at various stages of growth and under different nutrient-limited conditions in semi-continuous cultures were studied. The results showed that the hemolytic activity was highest in stationary phase, but did not decrease as cell entered into senescent phase; the hemolytic activity varied significantly among different treatments. Significantly higher hemolytic activities were detected in N- and Fe-limited cultures compared to those under non-limited conditions. However, hemolytic activity of culture under P-limited condition (N： P=150： 1) was the lowest, only 87.5 HU, lower than those under the other conditions. The average hemolytic activities per cell of cultures under N- limited and Fe-limited conditions were significantly higher than those under other nutrient limitation and non-limited conditions, whereas there was only a few differences between other three treatments. These suggested that growth and toxicity of Phaeocystis globosa were regulated by different factors, and that the toxin production might be related to cellular physiological stress, regulated by the availability of nutrients in Phaeocystis globosa.

Key words Phaeocystis globosa _ hemolytic activity _ allelopathy

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