

研究报告

UV-B辐射增强对三种赤潮微藻DNA的伤害效应

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摘要

运用生态毒理学和生物化学方法研究了UV-B辐射增强对赤潮异弯藻、亚历山大藻和中肋骨条藻DNA的伤害作用.结果表明,3种赤潮微藻的生长状况对UV-B辐射增强的敏感性不同;对UV-B辐射增强的敏感性由高到低依次是赤潮异弯藻、亚历山大藻和中肋骨条藻.随着UV-B辐射剂量的增加,3种赤潮微藻的DNA损伤程度提高,而且赤潮异弯藻DNA的损伤程度明显高于亚历山大藻和中肋骨条藻,亚历山大藻DNA的损伤程度又远远高于中肋骨条藻. UV-B辐射处理解除后,损伤DNA可明显恢复.赤潮异弯藻和亚历山大藻恢复培养6 d,损伤DNA可明显恢复 ($P<0.05$);而中肋骨条藻恢复培养3 d,损伤DNA可明显恢复 ($P<0.05$),说明3种赤潮微藻的DNA损伤水平不适合作为指示UV-B辐射增强的生物学指标.

关键词

赤潮异弯藻; 亚历山大藻; 中肋骨条藻; UV-B辐射增强; DNA损伤

分类号

Effects of UV-B radiation enhancement on DNA damage of three red-tide microalgae species

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Abstract

The ecotoxicological and biochemical study with *Heterosigma akashiwo*, *Alexandrium tamarens* and *Skeletonema costatum* showed that the test three species of red-tide microalgae had different sensitivities to UV-B radiation enhancement, and the order from high to low was *Heterosigma akashiwo*, *Alexandrium tamarens* and *Skeletonema costatum*. The DNA damage of algal cells increased with UV-B radiation enhancement, being more notable in *Heterosigma akashiwo* than in *Alexandrium tamarens* and *Skeletonema costatum*, and in *Alexandrium tamarens* than in *Skeletonema costatum*. The DNA damage of *Heterosigma akashiwo* and *Alexandrium tamarens* could be significantly repaired ($P<0.05$) after 6 days of UV-B radiation removal, and that of *Skeletonema costatum* could be significantly repaired ($P<0.05$) after 3 days, which illustrated that the DNA damage of three red-tide microalgae species could not indicate the damaged degree of marine microalgae resulted from UV-B radiation enhancement.

Key words

扩展功能

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