

研究报告

绿色巴夫藻受紫外(UV-B)胁迫后的超补偿生长效应

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摘要 以绿色巴夫藻(*Pavlova viridis*)为实验材料, 设置了18、36、54、65、86和108 J·m⁻² 6个UV-B辐射剂量处理组, 以无紫外辐射为对照, 解除胁迫后, 处理组和对照组在相同接种密度和相同条件下培养12 d, 测定了生长过程中的吸光值、生物量、叶绿素a、类胡萝卜素、可溶性蛋白质和胞内多糖含量. 结果表明, 在UV-B胁迫下, 绿色巴夫藻细胞生长受到显著抑制, 6个处理组细胞的相对增长率比对照下降了16.15%~60.00% ($P<0.05$). 但在胁迫解除后, 各胁迫处理的藻细胞生长指标均显著高于对照($P<0.05$), 证明绿色巴夫藻在胁迫后的恢复生长中出现超补偿生长现象. 恢复培养第12天, 最大吸光值、生物量、叶绿素a、类胡萝卜素、可溶性蛋白质和胞内多糖含量分别比对照提高了22.38%、15.00%、26.15%、23.81%、11.63%和27.58%. 藻类中存在超补偿生长特性为微藻生物活性物质的开发提供了有效途径.

关键词 [绿色巴夫藻](#) [UV-B](#) [胁迫](#) [超补偿](#)

分类号

Overcompensation effect of *Pavlova viridis* under ultraviolet (UV-B) stress

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Abstract

To examine the existence of overcompensation growth of microalgae, this paper studied the effects of UV-B stress on the production of bioactive substances during the overcompensation of *Pavlova viridis*. Six groups of UV-B treatments 18, 36, 54, 65, 86 and 108 J·m⁻² as well as the control were set up for this study. After the UV-B stress relieved, the treated groups and the control were simultaneously cultured for 12 days under the same inoculation density and normal culture conditions, and the parameters OD, biomass, chlorophylla, carotenoid, cellular protein and carbohydrate were measured. The results showed that under UV-B stress, the growth of *P. viridis* was inhibited significantly ($P<0.05$), with a decrease of relative growth rate being 16.15%~60.00%, compared with the control. But, after the relief of UV-B stress, the growth rate during anaphase was significantly higher ($P<0.05$) in UV-B treatments than in the control, indicating the occurrence of overcompensation growth. On the 12th day of culture, the OD, biomass, chlorophyll a, carotenoid, cellular protein and carbohydrate in treated groups were 22.38%, 15.00%, 26.15%, 23.81%, 11.63% and 27.58% higher than those in the control, respectively. The overcompensation growth of *P. viridis* provided an effective way to exploit the bioactive substances of microalgae.

Key words [Pavlova viridis](#) [UV-B](#) [stress](#) [overcompensation](#)

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