



### 高等水生植物对集胞藻(Synahocystis sp.)的化感作用研究

吴程, 常学秀, 吴锋, 刘军燕, 郑桂来

#### Studies on allelopathy of aquatic macrophytes on Synahocystis sp.

WU Cheng, CHANG Xue-xiu, WU Feng, LIU Jun-yan, ZHENG Gui-lai

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#### 摘要

通过比较10种高等水生植物(粉绿狐尾藻、水葫芦、水浮莲、金边富贵竹、荇菜、海菜花、金鱼藻、穗状狐尾藻、黑藻、苦草)培养水对集胞藻的化感作用,发现不同受试水生植物对集胞藻生长的影响存在明显差异.海菜花培养水对受试藻种的生长略有促进作用,而其他水生植物培养水均表现出不同程度的抑藻效应.抑藻效应的强弱顺序依次为:粉绿狐尾藻>水葫芦>金鱼藻>水浮莲>荇菜>穗状狐尾藻>黑藻>金边富贵竹>苦草,其中粉绿狐尾藻的抑藻效率高达89.9%.这说明受试水生植物能够释放某些化感物质到水体环境中,干扰集胞藻的正常生长.进一步研究粉绿狐尾藻、水葫芦和金鱼藻对集胞藻藻细胞吸收光谱及其特征吸收峰的影响,发现它们释放的化感物质可破坏集胞藻的叶绿素a和藻胆蛋白(包括PC和APC)的特征吸收峰,降低藻细胞对光的吸收能力,说明高等水生植物释放某些的化感物质损害藻类的叶绿素a和藻胆蛋白可能是其抑制或杀死浮游藻类的重要途径之一.

关键词: 高等水生植物 化感作用 集胞藻 藻胆蛋白 叶绿素a

#### Abstract:

Allelopathy of culture water from ten

kinds of macrophytes on Synahocystis sp. was investigated. The results sh

owed that there was slightly stimulation effect for Ottelia acuminata cultur

e water on Synahocystis sp., while significant inhibition effects of other

nine mac

rophytes on the algae were performed, and their inhibition capability was as fol

lowing: M aquaticum>E crassipes>C demersum>P stratiotes>N peltatum>M s

picatum>H verticillata>D sanderiana>V spiralis, the inhibition ratio of

M aquaticum on Synahocystis sp. is up to 89.9%. By analyzing the abs

orption spectral curve and the characteristic peaks of Synahocystis sp. cel

l, it was found that M aquaticum, Eichhornia crassipes and C demersum

could secrete some allelochemicals, which destroyed the chlorophyll a and phycob

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liprotein absorption peak, and disturbing the course of light-harvesting of S

ynahocystis sp. . It probably indicated that allelopathic co

mpounds released by macrophytes restrain the photosynthetic system of algae, whi

ch was one of importance ways for macrophytes inhibiting or even killing algae.

Key words:

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电话: 0871-5033829(传真) 5031498 5031662 E-mail: yndxxb@ynu.edu.cn yndxxb@163.com