

农学—研究报告

UV-B辐射增强对喜树叶片色素含量和形态结构的影响

王海霞<sup>1</sup>, 刘文哲<sup>2</sup>

- 1. 青岛农业大学
- 2. 西北大学生命科学学院

摘要:

笔者通过盆栽试验,以自然辐射为对照,研究人工增强UV-B辐射下(5.0 μW/cm<sup>2</sup>)喜树叶片中光合色素、类黄酮化合物含量及叶片形态结构的变化。试验结果表明:(1)UV-B辐射增强导致喜树叶片总叶绿素含量、叶绿素a与叶绿素b的比值(Chla/Chlb)及类黄酮类化合物含量上升,并随后呈下降趋势,而类胡萝卜素含量持续升高;(2)UV-B辐射增强导致叶形呈不对称状,色素分布异常,并伴有上表皮增厚、栅栏组织细胞增多、叶绿体扭曲的变化;(3)UV-B辐射增强使喜树叶片上表皮蜡质层增厚,表皮毛和腺毛数量增多,腺毛变短而粗;下表皮气孔被蜡质覆盖,开度变小。因此,增强UV-B辐射处理后,喜树幼苗体内的防御系统启动,叶片形态发生适应性变化,但最终喜树叶片细胞膜系统仍受到伤害并出现膜脂过氧化。

关键词: 叶片形态结构

Effects of Enhanced UV-B Radiation on Leaf Morphology and Structure and Pigment Contents of *Camptotheca acuminata*

Abstract:

Effects of enhanced UV-B radiation (5.0 μW/cm<sup>2</sup>) on leaf morphology and structure and the contents of photosynthetic pigment and flavonoids in *Camptotheca acuminata* were investigated in pots experiment. The results showed as follows: (1)The contents of chlorophyll and flavonoids, the ratio of chlorophyll a to chlorophyll b (Chla/Chlb) increased in earlier stage and decreased in later stage under enhanced UV-B radiation compared with which growing under natural light, while carotenoids content increased constantly. (2)The leaf shape asymmetry occurred because of skewing, the photosynthetic pigments distribution in leaves were uneven, the adaxial epidermis was thickened, the chloroplast structure was distorted. (3)Further studies with scanning electron microscope (SEM) observation revealed that the number of epidermal hairs and glandular trichomes increased, glandular trichomes turned shorter and wider, stomatal apparatus in abaxial epidermis were covered by waxy and aperture decreased. Therefore, the author considered that the UV-B radiation treatment could start the defense system of *Camptotheca acuminata* seedling, but finally it still could do great harm to the membrane system, membrane lipid peroxidation appeared.

Keywords: leaf morphology and structure

收稿日期 2010-07-22 修回日期 2010-09-09 网络版发布日期 2011-03-25

DOI:

基金项目:

通讯作者: 王海霞

作者简介:

作者Email: clevercat66@163.com

参考文献:

本刊中的类似文章

扩展功能

本文信息

- Supporting info
- PDF(1042KB)
- [HTML全文]
- 参考文献[PDF]
- 参考文献

服务与反馈

- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- 引用本文
- Email Alert
- 文章反馈
- 浏览反馈信息

本文关键词相关文章

- 叶片形态结构

本文作者相关文章

- 王海霞
- 刘文哲

PubMed

- Article by Yu,H.X
- Article by Liu,W.Z

