

## 东海剧毒卡尔藻的形态特征及其系统进化分析

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## Morphological and Phylogenetic Analysis of *Karlodinium veneficum* I isolated from the East China Sea in China

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摘要

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**摘要** 利用光学显微镜、荧光显微镜、扫描电镜及分子生物学等方法, 对分布于我国东海海域的剧毒卡尔藻(*Karlodinium veneficum*)藻株(LAMB090611)的形态特征和显微结构进行了描述, 并探讨了其分子系统进化关系。该藻株细胞长11.1 - 18.7  $\mu\text{m}$ , 平均值为(14.2 $\pm$ 1.8)  $\mu\text{m}$ , 宽8.2 - 14.7  $\mu\text{m}$ , 平均值为(10.8 $\pm$ 1.5)  $\mu\text{m}$ 。细胞形态结构特征为: 上下锥体积基本相同; 顶沟短而直; 腹孔明显; 纵沟延伸至上锥; 横沟错位距离约占细胞总长的28% - 38%; 含有2或4个不规则形态的叶绿体; 细胞核位于中部或下锥。此藻种的暴发可引发有害赤潮(harmful algal bloom)。当前加强有害赤潮的预防和监测工作是减少危害的有效途径, 而对引发赤潮原因种的准确识别和鉴定则是基础和关键。

**关键词:** 东海 剧毒卡尔藻 分子系统进化 形态特征 扫描电镜

**Abstract:** *Karlodinium veneficum* (D. Ballantine) J. Larsen (LAMB090611), isolated from the East China Sea of Zhejiang province, was reported for the first time in China. The strain of LAMB090611 was described on the basis of morphological characteristics, and molecular phylogenetics. The results of this study were acquired by light microscopy, fluorescence microscopy, scanning electron microscopy and molecular sequencing. The cells have a mean length of 14.2 $\pm$ 1.8  $\mu\text{m}$  (range 11.1 - 18.7  $\mu\text{m}$ ) and mean width of 10.8 $\pm$ 1.5  $\mu\text{m}$  (range 8.2 - 14.7  $\mu\text{m}$ ). The size of epicone is approximately the same as that of hypocone. The cell has a short, straight apical groove and distinct ventral pore, with usually 2 or 4 chloroplasts distributed irregularly in the cell. The sulcus extends onto the epicone. The cingulum displacement is about 28% - 38% of the body length. The nucleus is in middle of the cell or in the hypocone. A high density of this species results in harmful algal bloom. Therefore, the precise identification and detection of the causative species are important for monitoring and mitigation of such blooms.

**Keywords:** East China Sea)" href="#">

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