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RESEARCH ARTICLE

Oscillatoria ornata Kutz. ex Gomont. var.*crassa* Rao, C.B. (Oscillatoriaceae): First report to India from marine habitat

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Abstract

The present communication deals with the important cyanobacterium *Oscillatoria ornata* var.*crassa*. This cyanobacterium was collected from Kadalundi (Kerala), India, which is seen in associated with mangroves. The present report of cyanobacterium is the first record on the occurrence of *Oscillatoria ornata* var.*crassa* from marine habitat of India. Detailed morphological and taxonomic descriptions are provided. This is the first report of the species *Oscillatoria ornata* var.*crassa* from marine habitat of India.

Introduction

Cyanobacteria, a group of photosynthetic prokaryotes, are vital component of microbiota ranging from unicellular colonial to filamentous contribute a source of nitrogen in every mangrove ecosystems (Kathiresan and Bingham, 2001). They fulfil key roles in the biogeochemical cycling of matter and in the structure, maintenance and biodiversity of microbial and higher organism communities. Cyanobacteria can grow under very low water potential; such species can resist desiccation and grow in arid environments (deserts) or can tolerate high salinity to grow in hyper saline ponds. Benthic cyanobacteria are abundant in mangrove environments (Thajuddin and Subramanian, 1992) and 20% of species that occur saline conditions are truly marine.

The genus *Oscillatoria* is a filamentous cyanobacterium which is named for the oscillation in its movement. *Oscillatoria* sp. is the subject of research into the production of natural butylated hydroxytoluene (BTH) as an antioxidant (Babu and Wu, 2008). A study on mangrove-associated cyanobacteria in Muthupet estuary region in India has recorded the presence of 17 cyanobacterial species in which *Oscillatoria claricentrosa* was found only on *Sueada martima* (Selvakumar and Sundararaman, 2001). The species specificity may be attributed to the root exudates and also the environment concern. The root exudates may play a key role in forming a community structure by selectively stimulate and enrich certain groups of bacteria (Burgmann et al., 2005). 14 species of *Oscillatoria* has been reported from mangrove sediment of South East Coast of India (Sakthivel and Kathiresan, 2013). The species *Oscillatoria ornata* var.*crassa* has not been reported so far from marine habitat even though habitats promoting occurrence of this cyanobacterium is not rare.

Materials and Methods

The cyanobacterium was collected from Kadalundi estuary (10^0 7' 36" N and 75^0 50' 02" E). The samples were collected from sea water, pneumatophores, shells, woods etc. of Kadalundi mangrove ecosystem. The collected specimens were preserved in 4% formalin (APHA, 1998) for further analysis. Cyanobacterial identification was done with manuals of Desikachary (1959). Physico-chemical analysis was done with Multi-parameter PCS Tester 35.

Results and Discussion

The cyanobacterium was observed from the pneumatophores of *Avicennia officinalis*. The taxonomic enumeration is provided as follows,

Oscillatoria ornata Kutz. ex Gomont. var.*crassa* Rao,C.B.;

Thallus dark blue green, trichome straight of uniform thickness, 11-15µ broad, cross walls granulated, cells shorter than broad, 2-5.5 µ long.

Earlier reports revealed that the species, *Oscillatoria ornata* var.*crassa* is purely fresh water (Naz et al. 2014, Aysel, 2005). But, the present report of cyanobacterium is the first record on the occurrence of *Oscillatoria ornata* var.*crassa* from marine habitat of India.

Physico-chemical analysis of water revealed that the pH ranges from 7.4-8.03, water temperature ranges from 26.2 ^{0}C to 30.5 ^{0}C. Toledo et al. (1995) observed that colonization of non-heterocystous, filamentous cyanobacteria resembling *Lyngbya* and *Oscillatoria* species in aerial roots of black mangrove. The main feature of this roots colonization of cyanobacteria was the gradual production of a biofilm in which the filaments were embedded and a visible biofilm production increased with time until it completely covered the entire root system of the plant.

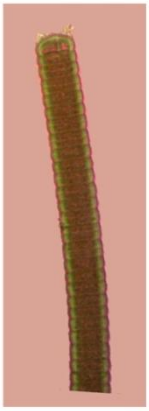

Fig 1: *Oscillatoria ornata var.crassa*

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