



# 2,3-Seco-2,3-dioxo-lyngbyatoxin A from a Red Sea Strain of the Marine Cyanobacterium *Moorea producens*

Diaa TA Youssef, Lamiaa A Shaala, Gamal A Mohamed, Sabrin RM Ibrahim, Zainy M Banjar, Jihan M Badr, Kerry L McPhail, April L Risinger, Susan L Mooberry.

## Abstract:

Chemical investigation of the organic extract of a Red Sea strain of the cyanobacterium *Moorea producens* has afforded 2,3-seco-2,3-dioxo-lyngbyatoxin A (1). Five known compounds including lyngbyatoxin A (2), majusculamides A and B (3 and 4), aplysiatoxin (5) and debromoaplysiatoxin (6) were also isolated. Their structures were elucidated by using HR-FAB-MS, 1D and 2D NMR analyses. The compounds were evaluated for antiproliferative activity against HeLa cancer cells. Lyngbyatoxin A (2) showed potent activity, with an IC<sub>50</sub> of 9.2 nM, while 5 and 6 displayed modest activity with IC<sub>50</sub> values of 13.3 and 3.03 mM, respectively. In contrast, compounds 1, 3 and 4 were inactive, with IC<sub>50</sub> values greater than 50 mM. The lack of cytotoxicity for 2,3-seco-2,3-dioxo-lyngbyatoxin A (1) demonstrates that the indole moiety in lyngbyatoxin (2) is essential for its cytotoxicity, and suggests that detoxification of 2 may be carried out by biological oxidation of the indole moiety to yield 1.

## Keywords:

Red Sea cyanobacterium; *Moorea producens*; 2,3-seco-2,3-dioxolyngbyatoxin A; lyngbyatoxin; HeLa cells; antiproliferative activity

## Published In:

Natural Product Research: Formerly Natural Product Letters , Vol. 29, No. 8 , pp. 703-709