

Novel chlorinated compounds isolated from the toxin producing cyanobacteria, *Trichodesmium thiebautii*.

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*Trichodesmium* is a toxin producing non-heterocystous cyanobacteria ubiquitous in tropical, subtropical, and temperate seas. *Trichodesmium* is known for its ability to fix nitrogen and for its massive blooms; as a result, it is considered the major component of oceanic primary production and global nitrogen cycling. The toxin(s) produced by this cyanophyte has been observed as a potential cause of death of fish, crabs and bivalves pan-globally. In addition, *Trichodesmium thiebautii* cells have demonstrated neurotoxic effects in laboratory studies, as well as caused respiratory distress and contact dermatitis of humans at collection sites. However, to date, a *T. thiebautii* toxin has not been isolated or structurally characterized. Here we report the extraction of a toxin(s) from *T. thiebautii* cell mass. We have established a purification method with several chromatographic techniques; demonstrated cytotoxic activity of purified *T. thiebautii* toxin using GH4C1 rat pituitary cells and N2A mouse neuroblastoma cells; and completed a chemical structure using nuclear magnetic resonance (NMR), mass spectroscopy (MS) and fourier transformed-infrared spectroscopy (FT-IR). The structure is a novel compound with a mass of 318 m/z and a molecular formula of C<sub>20</sub>H<sub>27</sub>ClO. We are currently working to elucidate the structure of a second chlorinated compound that has a mass of 341 m/z. These compounds are the first small molecule natural products isolated and characterized from *Trichodesmium*.

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