

Laboratory Support for Assessment of Cyanotoxins in Tissues and Water

Conducted for the

Aquatic Toxins Program
Division of Environmental Health
Florida Department of Health

under

US Centers for Disease Control and Prevention
Grant #U50-CCU423360-01

by

Bureau of Laboratories
Florida Department of Health
Jacksonville, Florida

September 2004

Florida Department of Health Aquatic Toxins Program

Laboratory Personnel

- Primary Investigator:

Marek Pawlowicz, Ph.D.
Environmental Microbiology
Florida Department of Health
Bureau of Laboratories
Jacksonville, Florida 32202

Objectives

- **Conduct laboratory analyses of water and various tissues for presence of cyanotoxins.**
- **Conduct Inter-laboratory validation with private and public institution to assure accurate and comparable results.**
- **Improve & validate developed laboratory method for simultaneous determination of Microcystin's (MIC), Cylindrospermopsin (CYN) and Anatoxin (ANA) in one single injection.**

HPLC/MS used for Cyanotoxins Analysis



Past Year Accomplishments:

- Proved that simultaneous determination of several different toxins (MIC, ANA, CYN) in one sample can serve as rapid & reliable screening tool.
- Secured sufficient quantity of high purity standard for Cylindrospermopsin that allowed us to improve quantitation of CYN in samples and to optimize the extraction method of this highly hydrophobic compound from samples.

Past Year Accomplishments

Public Health Significance:

Ability to use one relatively simple and robust analytical method for rapid, simultaneous determination of several different toxins (MIC, ANA, CYN) in one sample is very critical for public health as it will give quick results that enable timely implementation of corrective measures.

Past Year Accomplishments

Challenges:

- **Lack of certified Cyanotoxin standards from reliable commercial sources**
- **Lack of EPA-Approved Analytical Methods & Guideline**
- **QA/QC of Sample Collection - (Elimination of variables by implementation of protocols for sample collection and transportation (water or tissue)).**
- **Development of sampling program.**

Future Direction

- **Evaluate, optimize and standardize new extraction methods of cyanotoxins from various tissues (blood, liver, muscle).**
- **Develop an efficient data management :**
 - **set-up reliable reporting procedures,**
 - **provide electronic access to results,**
 - **facilitate data sharing,**
 - **reduce lag time in assessing and responding to significant findings.**

Future Direction

- **Expand capability to include other toxins of interest**
- **Continuation of development of specific, sensitive, quantitative and reproducible multiple analyte methodology adaptable to monitoring and regulatory programs.**

Synergism & Collaborations:

- In light of limited knowledge of human health effects from exposure to cyanotoxins - it is critical to evaluate & monitor these toxins in environment & human body to provide data for “dose-response” understanding of adverse health effects & epidemiological studies.**



Florida Department of Health Aquatic Toxins Program

Support for this research was provided
by the

Centers for Disease Control and Prevention

Grant #U50-CCU423360-01





Aquatic Toxins Program
Division of Environmental Health
Bureau of Community Environmental Health
4052 Bald Cypress Way
Tallahassee, Florida 32399-1712

To report illnesses related to Blue Green
Algae (Cyanobacteria) call the toll free
Aquatic Toxins Hotline at 1.888.232.8635