Adda Microcystins/Nodularins Report

Project: Jacksonville University

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Sample Receipt Date:	5 August 2021
Sample Condition:	7.2 ºC upon arrival
Report#	210804_JU_Student
Date Prepared:	6 August 2021
Prepared by:	Kamil Cieslik

Table 1: Samples analyzed

Sample Identification	Site/Description	Collection Date
Lower SJR @	End of Oakvale Fruit Cove	4 August 2021
Lower SJR @	Mandarin Point	4 August 2021

Analytes: Adda Microcystins/Nodularins (MCs/NODs)

Abbreviations

NA	Not Applicable	LFSM	Lab Fortified Sample Matrix
MDL	Method Detection Limit	LFSMD	Lab Fortified Sample Matrix Duplicate
MQL	Method Quantification Limit	LD	Lab Duplicate
ND	Not Detected above the MDL	IS	Internal Standard
Blank	Regent Water free from interferences	—	Not Analyzed
LFB	Lab Fortified Blank	MRL	Method Reporting Limit
CCC	Continued Calibration Check	CV	Low-range calibration verification

Sample Preparation

Water Sample Freeze-Thaw

The samples were inverted for 60 seconds to mix. A subset from each sample was transferred to a 15 mL vial. Three freeze-thaw cycles were employed prior to additional sample preparation and subsequent analysis.

Analytical Techniques

Enzyme-Linked Immunosorbent Assay (ELISA)

MCs/NODs

A microcystins/nodularins Adda ELISA (Abraxis) was utilized for the quantitative and sensitive congener-independent detection of Adda MCs/NODs (US EPA Method 546 & Ohio EPA DES 701.0). The current method reporting limit is 0.30 ng/mL (ppb) based on kit sensitivity (0.15 ng/mL), dilution factor, and initial demonstration of capability.

Qualifier	Flag
CL	Analytical result is estimated due to ineffective quenching.
J	Analyte was positively identified; the associated numerical value is estimated.
PT	The reported result is estimated because the sample was not analyzed within required holding time.
B	Analytical result is estimated. Analyte was detected in associated reagent blank as well as the samples.
E	Analytical result is estimated. Values achieved were outside calibration range.
N	Spiked sample control was outside limits
T	The reported result is estimated because the sample exceeded temperature threshold when received

Quality Control

Table 2: LFSM QC samples prepared for analyses. Additional Quality Control/Quality Assurance checks included method blanks, continued calibration checks, LFBs, and external curves.

Analyte	Concentration (ng/mL)	Sample ID	QC Type	Return
MC-LR	1.0	End of Oakvale Fruit Cove	LFSM	93%

**Control limits: water LFSM ± 30%; complicated matrix LFSM and when LFSM within 2x MDL ±50%; IS ± 50%*

Table 3: Raw ELISA Data

Sample ID	Analyte	Dilution Factor	Assay Values (ng/mL)	%CV	Concentration (ng/mL)	Average (ng/mL)
End of Oakvale Fruit Cove	MCs/NODs	1	0.08	32.3	<0.30	**ND**
		1	0.05		<0.30	
End of Oakvale Fruit Cove LFSM	MCs/NODs	1	0.96	4.5	0.96	**0.99**
		1	1.02		1.02	
Mandarin Point	MCs/NODs	1	0.32	6.4	0.32	**0.31[J]**
		1	0.29		<0.30	

Table 4: Adda MC-ELISA Quality Control Value Table

Date Analyzed:	**6 August 2021**	**Requirement**	**Pass/Fail**
R^2 value:	0.999	≥0.98	PASS
%CV range STDs:	0.1-4.5%	≤15%	PASS
LFB (1 ppb) recovery:	95%	±40% True Value	PASS
%CV range LFB:	13.7%	<20%	PASS
Low CCC (0.15 ppb) recovery:	88%	±50% True Value	PASS
LRB	<0.08	<0.08	PASS

Summary of Results

Table 5: Summary of results in ng/mL

Site/Description	MCs/NODs (ng/mL)
End of Oakvale Fruit Cove	ND
Mandarin Point	**0.31[J]**
MRL (ng/mL):	*0.30*
Analyst Initials:	*KC*
Date Analyzed:	*8/6/2021*

Interpretations:
The level of Adda MCs/NODs detected in the Mandarin Point sample does not exceed the current 'Draft EPA Recommended Value for Recreational Criteria and Swimming Advisory', which is currently 8 ng/mL (ppb) total microcystins. The WHO recreational guidance value for microcystin is currently 24 ng/mL (ppb) (World Health Organization (WHO), 2020a).

World Health Organization (WHO), 2020a. Cyanobacterial toxins: microcystins. Guidel. Drink. Qual. Guidel. Safe Recreat. Water Environ. 63.

Submitted by: Mark T. Aubel, Ph.D.
Lab Director
Date: August 6, 2021

The results in this report relate only to the samples listed above.
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