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# Histology, Condition Factor, and Bioaccumulation Analysis of *Clarias gariepinus* (Burchell, 1822) Exposed to MC-LR

- Chapter
- First Online: 30 July 2023
- pp 37–52
- [Cite this chapter](#)

## **Biotechnological Approaches to Sustainable Development Goals**

- [Patrick Omoregie Isibor](#),
- [Onwaeze Oritseweyinmi Ogochukwu](#),
- [David Osagie Agbontaen](#),
- [Paul Akinduti](#),

- [Adagunodo Theophilus Aanuoluwa](#),
  - [Obafemi Yemisi](#),
  - [Dedeke Gabriel Akinwumi](#) &
  - [Akinsanya Bamidele](#)
- 
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## Abstract

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Reproductive dysfunctions in several fish species have been linked to eutrophication due to the presence of cyanobacteria which contain biotoxins known as microcystins. In this study, microcystin-LR (MC-LR) from microcystins cells was isolated from water samples of Eleyele and Iju rivers, as well as two *Clarias gariepinus* fish ponds (Pond A was fed on poultry dropping, while Pond B was fed on artificial feed). *C. gariepinus* fish samples from the four sources were compared based on the histopathology of the liver and gill tissues (using haematoxylin and eosin stain, viewed under a binocular dissecting microscope) and growth exponent using Le Cren's cube law, and condition factors of the fish specimens were determined using Fulton's formula. The mean microcystis cells in the water samples from the four sources were determined by chromatographic separation using Varian ProStar 330 Diode Array Detector. The order of microcystis cells in the sites was Iju River > Pond B > Pond A > Eleyele River. The condition factors among the fish were in the order of Pond A > Eleyele River > Pond B > Iju River. Consistently, histopathological alterations in the liver, gills and muscles were most observed in samples from Iju River and Pond B. These fishes also exhibited marked slenderness characterized by growth exponent <3. The relative robustness of fish from Pond B, followed by Eleyele River, is attributable to relatively low concentrations of MC-LR in the water coupled with purposeful feeding of the fish in captivity, compared to the natural habitats where fish forages based on the availability of food. The study provides data for informed decisions on the proper management of fish contamination with microcystins in aquaculture facilities and natural aquatic habitats.

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## Author information

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### Authors and Affiliations

- 1. Department of Biological Sciences, Covenant University, Ota, Ogun State, Nigeria**  
Patrick Omoregie Isibor, Onwaeze Oritseweyinmi Ogochukwu, Paul Akinduti & Obafemi Yemisi
- 2. Department of Public Health, University of South Wales, Cardiff, UK**  
David Osagie Agbontaen
- 3. Department of Physics, Covenant University, Ota, Ogun State, Nigeria**  
Adagunodo Theophilus Aanuoluwa
- 4. Department of Pure and Applied Zoology, Federal University of Agriculture, Abeokuta, Nigeria**  
Dedeke Gabriel Akinwumi
- 5. Department of Zoology, University of Lagos, Lagos, Nigeria**  
Akinsanya Bamidele

## Editor information

---

### Editors and Affiliations

- 1. Department of Biological Sciences, Covenant University, Ota, Ogun State, Nigeria**  
Patrick Omoregie Isibor
- 2. Department of Biological Sciences, Covenant University, Ota, Ogun State, Nigeria**  
Paul Akinduti
- 3. Department of Biological Sciences, Covenant University, Ota, Ogun State, Nigeria**  
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- 4. Department of Biological Sciences, Bowen University, Iwo, Osun State, Nigeria**  
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[https://doi.org/10.1007/978-3-031-33370-5\\_4](https://doi.org/10.1007/978-3-031-33370-5_4)

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- DOI [https://doi.org/10.1007/978-3-031-33370-5\\_4](https://doi.org/10.1007/978-3-031-33370-5_4)
- Published 30 July 2023
- Publisher Name Springer, Cham
- Print ISBN 978-3-031-33369-9
- Online ISBN 978-3-031-33370-5
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