



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



MONA MAGHRABY



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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MONA MAGHRABY



Faculty of Women for Arts,
Science & Education
Zoology Department

Effect of *Nigella sativa* on silver nanoparticles induced hepato-nephrotoxicity in *Clarias gariepinus*

Thesis

Submitted in partial fulfillment for the requirements for the
degree of Master of Science in Zoology

By

Nermein Gamal Andrawes Georgy

B.Sc. of science, Zoology department,

Faculty of Women for Arts, science & Education

Ain Shams University

Supervision

Prof. Dr. Afaf Abd El- Galeel Abo Nour

Professor of Physiology, Zoology Department,
Faculty of Women for Arts, Science &
Education
Ain Shams University

Prof. Dr. Adel Abdel-Aleem Shaheen

Professor of fish diseases and management.
Department of aquatic animals diseases and
management
Faculty of Veterinary Medicine
Benha university

Assoc. Prof. Heba Salah Mohamed Hamed

Associate professor of Fish physiology, Zoology Department,
Faculty of Women for Arts, Science & Education
Ain Shams University

2021

DEDICATION

To my Kind

Parents

To my

Faithful Brother

Kyrillos Gamal

Qualifications

Name : Nermein Gamal Andrawes

Scientific Degree: B.Sc.

Department : Zoology

**College : Faculty of women for Arts, Science
& Education**

University : Ain Shams University

Graduation year : 2013

Courses

**Courses studied by the candidate in partial
fulfillment of the requirements for the degree of M.Sc.**

1-Physiology

2- Histology

3- Immunology

4- Toxicology

5- Ethics of scientific research

6- Writing scientific research



Ain Shams University
Faculty of Women for Arts,
Science & Education
Zoology Department

APPROVAL SHEET

Name: Nermein Gamal Andrawes Georgy

**Title: Effect of *Nigella sativa* on silver nanoparticles
induced hepato-nephrotoxicity in *Clarias
gariepinus*.**

Scientific Degree: M.Sc.

Supervisors

Prof. Dr.

Afaf Abd El- Galeel Abo Nour

Professor of Physiology, Zoology
Department, Faculty of Women for Arts,
Science & Education
Ain Shams University

Prof. Dr.

Adel Abdel-Aleem Shaheen

Professor of fish diseases and management.
Department of aquatic animals diseases and
management.
Faculty of Veterinary Medicine
Benha university

Assoc. Prof. Heba Salah Mohamed Hamed

Associate professor of fish physiology,

Zoology Department,

Faculty of Women for Arts,

Science & Education

Ain Shams University

2021

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ABSTRACT

Effect of *Nigella sativa* on silver nanoparticles induced hepato-nephrotoxicity in *Clarias gariepinus*

Silver nanoparticles (Ag-NPs) is effectively used in varied aquaculture applications. This study aimed to determine LC₅₀ of (Ag-NPs) in African catfish (*Clarias gariepinus*) as well as the protective role of *Nigella sativa* (NS) against Ag-NPs toxicity. Fish were divided into 4 groups of triplicates as follows: group I: was showed as control, group II: was fed on 3% NS inclusion diet, group III: was exposed to 50 mg/L Ag-NPs and group IV exposed to 50 mg/L Ag-NPs and fed on 3% NS for 30 days.

At the end of experiment blood collected for biochemical analysis. As well as liver and kidney tissues of catfish were taken for oxidative enzymes, DNA analysis and histopatholglial studies.

The results exhibited that exposed of catfish with 50 mg/L Ag-NPs lead to a marked increase in liver enzymes Alkaline phosphatase (ALP), alanine amino transferase (ALT) and Aspartate amino transferase (AST). Also, these increases were indicated in kidney activities (urea, creatinine, and uric acid). Levels of total proteins, albumin and globulin were markdly increased. However, A/G ratio decreased. Also, glucose, cortisol and lactate dehydrogenase (LDH) levels were significantly increased. and total lipids levels (cholesterol and triglyceride) were increased. On the other and, African catfish exposed to Ag-NPs showed significant ($p<0.05$) elevation in the level of Lipid peroxidation (LPO) of liver and kidney tissues. These results indicated that the levels of reduction glutation (GSH), catalase (CAT), superoxide dismutase (SOD), and total antioxidant capacity (TAC) increased compared to the control fish after exposure to 50 mg/L Ag-NPs for 30 days.

Furthermore, percentage of DNA damage in both liver and kidney tissue of African catfish exposed to 50 mg/L Ag-NPs significantly increased.

Histological study in hepatic and renal tissues of African catfish represented more damage and alternation in tissues that exposed to 50 mg/L Ag-NPs for 30 days compare to control group and treatment group with 3% NS. It is concluded that the feeding of African catfish on a (NS) enriched diet minimized the destructive impacts of Ag-NPs toxicity and restored the above-mentioned variable near to the control group. The current investigation has revealed that dietary NS has antagonistic functions against Ag-NPs toxicity in African catfish.

Key words: Silver nanoparticles

Clarias gariepinus

Nigella Sativa

Biochemistry

DNA fragmentation

Histopathology.

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