شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية
التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة

بالرسالة صفحات
لم ترد بالأصل

Ain Shams University
Faculty of Science
Entomology Department

"Application of curcumin-magnetic nanoparticles for the diagnosis of Alzheimer's disease using Drosophila melanogaster (Drosophilidae: Diptera) as a study model"

A thesis submitted in partial fulfillment for the award of Master of Science Degree (M.Sc.) in Entomology
Ain Shams University

By

Aya Ahmed Saeed Mohamed

(B.Sc. Entomology 2015)

Supervisors

Prof. Dr. Magdi Gebril Shehata
Professor of Medical Entomology,
Faculty of Science,
Ain Shams University

Prof.Dr. Abdel-Rahman Nabwi Zekri
Professor of Virology and Immunology,
Cancer Biology Department, National Cancer Institute,
Cairo University- Vice President of Cairo University for Research and Postgraduates Affair.

Dr. Enas Hamdy Saad
Lecturer of Entomology,
Faculty of Science,
Ain Shams University

(2020)

This work was supported by Academy of scientific research and technology, Scientists for the next-generation grant, grant reference no: 34 SNG-2015.

Contents:

ABBREVIATIONS:

AD	**Alzheimer disease**
APoE	**Apolipoprotein E**
APP	**Amyloid precursor protein**
APPL	**β-amyloid protein precursor like**
ATCC	**American Type Culture Collection**
ATP	**Adenosine triphosphate**
Aβ	**Amyloid beta**
BBB	**Blood Brain Barrier**
BHK	**Baby Hamster Kidney fibroblasts**
cDNA	**Complementary DNA**
CSF	**Cerebrospinal fluid**
CTCF	**Corrected Total Cell Fluorescence**
Cur-MNPs	**Curcumin-Magnetic Nanoparticles**
DLS	**Dynamic Light Scattering**
DMEM	**Dulbecco's Modified Eagle Medium**
DMSO	**Dimethyl sulfoxide**
DNA	**Deoxyribonucleic acid**
dNTP	**Deoxynucleoside triphosphate**
FAD	**Familial Alzheimer disease**
FBS	**Fetal bovine serum**
FDA	**Food and Drug Administration**
Fe3O2	**Iron Oxide**
FePt	**Iron Platinum**
H	**Hour**
IC50	**The half maximal inhibitory concentration**
IntDen	**Integrated Density**

Io-MNPs	**Iron Oxide Magnetic Nanoparticles**
MNPs	**Magnetic Nanoparticles**
MRI	**Magnetic resonance imaging**
MTT	**Tetrazolium Salt, 3-4,5 Dimethylthiazol-2,5 Diphenyl Tetrazolium Bromide**
N18TG2	**Neuroblastoma cells**
Nep2	**Neprilysin-2**
NIRF	**Near-Infrared Fluorescence**
O.D	**Optical density**
PBS	**Phosphate Buffer Saline**
PCR	**Polymerase Chain Reaction**
PDB	**Protein Data Bank**
PET	**Positron Emission Tomography**
Psn	**Presenilin**
RNA	**Ribonucleic acid**
Ros	**Reactive Oxygen Species**
RPMI	**Roswell Park Memorial Institute medium**
RTC	**Research and Training Center on vector of diseases**
RT-PCR	**Reverse transcription polymerase chain reaction**
SD	**Standard Deviation**
TEM	**Transmission Electron Microscopy**

List of Tables:

List of Figures:

ABSTRACT

Abstract

Alzheimer's disease (AD) is a neurological disorder associated with the over expression of amyloid-beta (Aβ) protein that appears to be the main causative reason.

Drosophila melanogaster is considered as a very significant model organism to study human neurodegeneration including AD, and this seems to be a valuable tool for researchers to improve a new diagnostic approach for neurodegenerative diseases.

There are many new techniques used for diagnosis of AD, including curcumin and nanoparticles. The conjugation of curcumin with magnetic nanoparticles make it a promising potential method for diagnosis.

The purpose of this study is to diagnose the AD by detecting the accumulation of Aβ via curcumin-magnetic nanoparticles with using *D.melalogaster* and fluorescence imaging technique for detection.

The accumulation of amyloid beta-peptide has been detected via the conjugate using the fluorescence imagining technique. These results suggest that curcumin- magnetic nanoparticles conjugation could be used as a diagnostic tool for AD.

Introduction