CERTIFICATE

This is to certify that the thesis entitled '**Neuroprotective effect of synthesized zinc oxide nanoparticle-capped catechin**' submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for the award of the degree of **DOCTOR OF PHILOSOPHY (Ph.D.) IN BIOCHEMISTRY**, is a record of original research work done by **B. NANDHINI** during the period of her study in the Department of Biochemistry, Biotechnology and Bioinformatics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, under my supervision and guidance and the thesis has not formed the basis for the award of any Degree, Diploma, Associateship, Fellowship or similar title to any candidate of any other University or Institution of higher learning

Signature of the
Head of the Department

24/6/2024
Signature of the Supervisor
with designation

24/6/2024
Signature of the Dean
School of Biosciences

DECLARATION

I hereby declare that the matter embodied in the thesis entitled **'Neuroprotective effect of synthesized zinc oxide nanoparticle-capped catechin'** is the result of investigations carried out by me in the Department of Biochemistry, Biotechnology and Bioinformatics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfilment of the requirements for the award of the degree of **DOCTOR OF PHILOSOPHY (Ph.D.) IN BIOCHEMISTRY** and is a record of original research work done by me under the supervision and guidance of **Dr. ANITHA SUBASH, Dean, School of Biosciences** and Professor of Biochemistry, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore and it has not been submitted for the award of any Degree, Diploma, Associateship or Fellowship of any other University or Institution of higher learning.

24/6/2024

Signature of the Supervisor

24/6/2024.

Signature of the Candidate

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B. Nandhini Karthikeyan

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ABBREVIATIONS

AChE	-	Acetylcholinesterase
ADMET	-	Absorption, Distribution, Metabolism Excretion and Toxicity
AV		Atrioventricular
BChE	-	Butyrylcholinesterase
CNS		central nervous system;
CO_2	-	Carbon dioxide
COPD		Chronic obstructive pulmonary disease
CTC		Crush, Tear and Curl
CV		Cardiovascular
DCFDA	-	Dichlorodihydro Fluorescein Diacetate
DCFDA	-	Dichlorodihydro Fluorescein Diacetate
DPPH	-	Diphenyl-Picryl Hydrazine
EC	-	epicatechin
ECG	-	epicatechin-3-gallate
EDAX	-	Energy-dispersive X-ray analysis
EGC	-	epigallocatechin
EGCG	-	epigallocatechin-3-gallate
FBS	-	Fetal bovine serum
FRAP	-	Ferric Reducing Antioxidant Power
FTIR	-	Fourier Transform Infra-Red Spectroscopy
FTP	-	File Transfer Protocol
GC-MS	-	Gas chromatography/Mass spectrometry
GI		Gastrointestinal
GLIDE	-	Grid based Ligand Docking with Energetics

HPTLC	-	High Pressure Thin Layer Chromatography
LC-MS	-	liquid chromatography-mass spectrometry
LDH	-	Lactate Dehydrogenase
MEM-EBSS	-	Minimal Essential Medium- Earle's Balanced Salt Solution
MO-ZnONP		zinc oxide nanoparticles using *Moriga olifera* leaf extract
MTT	-	dimethylthiazolyl- 20, 50-diphenyl-2-H-tetrazolium bromide
NMR	-	Nuclear Magnetic Resonance spectrometry
NSAID		Non-steroidal anti-inflammatory drugs
PDB	-	Protein Data Bank
Rf value	-	Retardation factor value
ROS	-	Reactive Oxygen Species
SEM	-	Scanning Electron Microscopy
SOD	-	Superoxide Dismutase
SP	-	Standard Precision
TAC	-	Total Antioxidant Capacity
TLC	-	Thin layer chromatography
UV	-	Ultraviolet–Visible spectroscopy
WHO		World Health Organization
XP	-	GLIDE Xtra Precision
XRD	-	X-ray powder diffraction

LIST OF PUBLICATIONS

- Baskaran, N. and Subash, A. (2023). *In vitro* antioxidant and acetylcholinesterase activities of catechin-loaded green fabricated zinc oxide nanoparticles, *Journal of Applied Biology and Biotechnology,* 11(6): 178-184. DOI: 10.7324/ JABB. 2023.131095

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