

CERTIFICATE


This is to certify that the thesis entitled “**Development of Bioactive Drug Formulations Using Eco-friendly Metallic Nanoparticles for Sustained Drug Release Systems and Selected *In vitro* Biomedical Applications**” submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for the award of **Degree of Doctor of Philosophy (Ph.D.) in Chemistry**, is a record of original research work carried out by **Rajalakshmi R**, during the period of her study in the Department of Chemistry, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, under my guidance and supervision, and the thesis has not formed the basis for the award of any Degree/Diploma/Associateship/ Fellowship or similar titles any other university.


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DECLARATION

I hereby declare that the thesis entitled “**Development of Bioactive Drug Formulations Using Eco-friendly Metallic Nanoparticles for Sustained Drug Release Systems and Selected *In vitro* Biomedical Applications**” submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore for the award of degree of **Doctor of Philosophy in Chemistry** is a record of original research work done by me under the supervision and guidance of **Dr. P. Lalitha, M.Sc., M.Phil., Ph.D., Director, Research & Development and Professor, Department of Chemistry, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore** and that it has not formed the basis for the award of any Degree/ Diploma/ Associateship/Fellowship or similar title to any candidature of any other University.


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Rajalakshmi R

List of Abbreviations and Acronyms

ADMET	Adsorption, Distribution, Metabolism, Excretion and Toxicity	min	Minutes
AP	<i>Amphilophium paniculatum</i>	mL	Millilitre
BBB	Blood Brain Barrier	mm	Millimetre
BF	<i>Haematocarpus validus</i>	µg	Microgram
BMIMCl	1-butyl-3-methyl imidazolium chloride	µL	Microlitre
BMRSP	Ball Milled Red Sandal Powder	mM	Millimole
cm	Centimetre	MRSA	Methicillin Resistant <i>S. aureus</i>
CYP	Cytochrome	MSA	Molecular Surface Area
D	Diameter	MTT	3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide.
DDS	Drug Delivery System	N	Newton
DNA	Deoxyribonucleic Acid	nL	Nanolitre
°C	Degree Celsius	nm	Nanometre
DNS	Dinitro Salicylic Acid	NPs	Nanoparticles
DPPH	2,2- diphenyl picryl hydrazyl	O ₃	Ozone
DPP-IV	Dipeptidyl peptidase -4	OD	Optical Density
DSC-TGA	Differential Scanning Calorimetry- Thermogravimetric Analysis	OSC	Organo Sulphur Compounds
EDS	Energy Dispersive X-Ray Spectroscopy	PBS	Phosphate Buffer
FESEM	Field Emission Scanning Electron Microscopy	PDB	Protein Data Bank
FLT	Floating Lag Time	DS	<i>Phoenix dactylifera</i>
FTIR	Fourier Transform Infrared Spectroscopy	%	Percentage
FTs	Floating tablet	ppm	Parts per million
FWHM	Full Width Half Maximum	RNA	Ribonucleic Acid
g	Gram	ROS	Reactive Oxygen Species
GI	Gastrointestinal	RSP	Red Sandal Powder
GIT	Gastro Intestinal Tract	RT	Room Temperature
GNPs	Gold Nanoparticles	S	Seconds
GSM	Gram per Square Meter	SL	Solar light Irradiation
h	Hour	SNPs	Silver Nanoparticles
HIV	Human Immunodeficiency Virus	SPR	Surface Plasmon Resonance
HLB	Hydrophilic-Lipophilic Balance	TA	<i>Tristellateia australasiae</i>
HPTLC	High Performance Thin Layer Chromatography	θ	Theta
IC ₅₀	Half minimal inhibitory concentration	TFT	Total Floating Time
IDF	International Diabetes Federation	2D	Two Dimensional
Ils	Ionic Liquids	TLC	Thin Layer Chromatography
Kcal	Kilocalories	UPF	Ultra violet Protection Factor
kV	Kilovolt	UV	Ultra Violet light
L	Litre	VGNPs	Vanillin Capped Gold Nanoparticles
LC ₅₀	Half minimal lethal concentration	VNPs	Vanadium Nanoparticles
LSPR	Localized Surface Plasmon Resonance	λ _{max}	Wavelength of maximum absorbance
m	Meter	WHO	World Health Organization
M	Molar	XRD	X-Ray Diffraction
mA	Milliampere	Zn-Se	Zinc Selenide
MDRB	Multidrug Resistant Bacteria's	ZOI	Zone of Inhibition

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