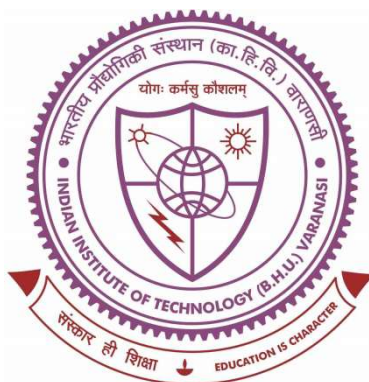


**ISOLATION, STRUCTURAL MODIFICATION AND
FORMULATION DEVELOPMENT OF NATURAL BIOACTIVE
COMPOUNDS FOR CANCER THERAPY**



**Thesis submitted in partial fulfillment for the
award of degree**

Doctor of Philosophy

By

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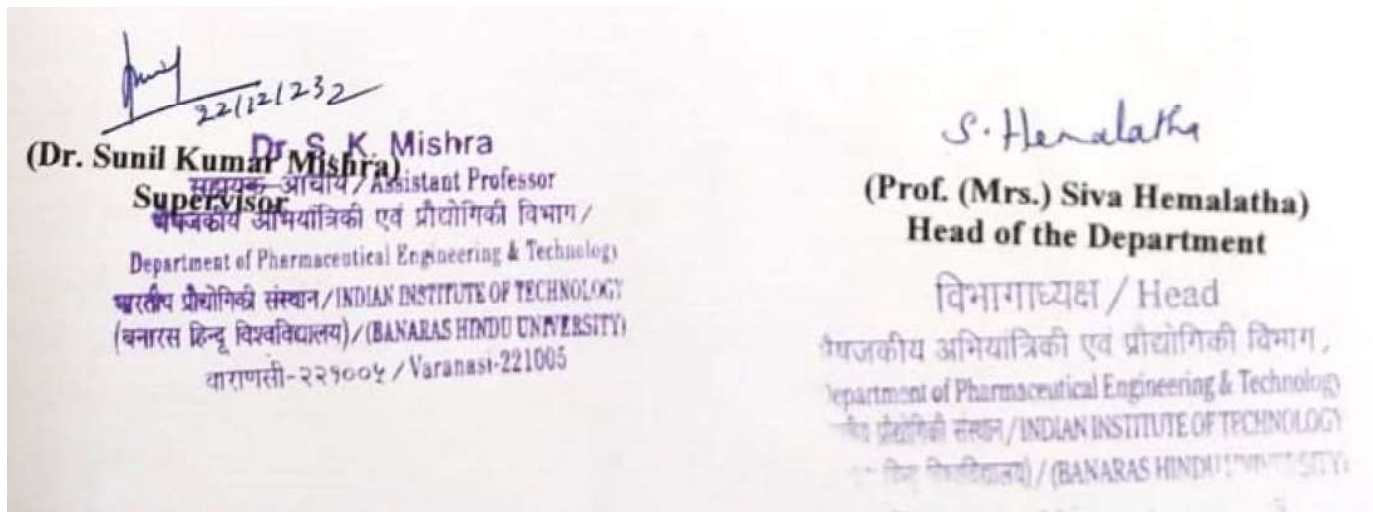
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List of Abbreviations

Abbreviations	Full forms
ALB	Bovine serum albumin
ALB-NPs	Albumin nanoparticles
ADT	AutoDockTools
AFM	Atomic force microscopy
ANOVA	Analysis of variance
AO	Acridine orange
ASA	Asiatic acid
AUC	Area under the curve
A549 cells	Human lung cancer cells
B(a)P	Benzo(a)pyrene
C _{max}	Maximum plasma concentration
CADD	Computer-aided drug discovery
C6	Coumarin-6
CTX	Cetuximab
CTX-OLA-ALB-NPs	CTX conjugated Oleanolic acid loaded ALB-NPs
CTX-ASA-ALB-NPs	CTX conjugated Asiatic acid loaded ALB-NPs
DLS	Dynamic light scattering
DMEM	Dulbecco's Modified Eagle's medium
DMSO-d ₆	Deuterated dimethyl sulfoxide-d ₆
DSC	Differential scanning calorimetry
DXL	Docetaxel

EDC	1-ethyl-3-(3-dimethylaminopropyl)-N-carbodiimide hydrochloride
EE	Entrapment efficiency
EGFR	Epidermal growth factor receptor
EPR	Enhanced permeability and retention
EtBr	Ethidium bromide
EtOAc	Ethyl acetate
FBS	Fetal bovine serum
FDA	Food and Drug Administration
FTIR	Fourier transform infrared spectroscopy
H&E	Hematoxylin and eosin
HBA	Hydrogen bond acceptor
HBD	Hydrogen bond donor
HPLC	High-performance liquid chromatography
HRMS	High-resolution mass spectrometry
IC ₅₀	Concentration that caused a 50% reduction in cell growth relative to control
MeOH	Methanol
MRT	Mean residence time
MTT	3-(4,5-dimethyl thiazolyl-2-yl)-2,5-diphenyltetrazolium bromide
NCCS	National Centre for Cell Science
NHS	N-hydroxy-succinimide
NMR	Nuclear magnetic resonance spectroscopy
NP/NPs	Nanoparticles

NPr	Natural Product
NSCLC	Non-small cell lung cancer
OLA	Oleanolic acid
PBS	Phosphate buffered saline
PDI	Polydispersity index
PDB	Protein data bank
PI	Propidium iodide
PS	Particle size
RCSB	Research Collaboratory for Structural Bioinformatics
RT	Room temperature
SEM	Scanning electron microscopy
TEM	Transmission electron microscopy
TPGS	D- α -tocopheryl polyethylene glycol 1000 succinate
TPGS-SA	Succinic acid functionalized TPGS
TMS	Tetramethyl silane
XPS	X-ray photoelectron spectroscopy
XRD	X-ray diffraction spectroscopy

List of Symbols

Symbols	Meaning
α	Alpha
β	Beta
δ	Delta
$^{\circ}\text{C}$	Degree Celsius
\AA	Angstrom
mg	Milligram
μg	Micro gram
μM	Micromole
mmol	Millimole
mL	Milliliter
μL	Microliter
h	Hour
s	Singlet
nm	Nanometer
μm	Micrometer
mm	Millimeter
cm	Centimeter
ppm	Parts per million
rpm	Revolutions per minute
Kcal	Kilocalories
<i>i.v.</i>	Intravenous
Hz	Hertz
MHz	Megahertz
mV	Milli volts
J	Coupling constant
d	Doublet
t	Triplet
m	Multiplet
dd	Doublet of doublet
m/z	Mass to charge ratio
%	Percent
pH	Potential of hydrogen
\leq	Less than or equal
$<$	Less than
$>$	More than
\pm	Plus or minus