Cancer growth suppression using purified azurin from native *Pseudomonas* isolates

Thesis submitted to
the University of Calicut for the
award of the degree of

DOCTOR OF PHILOSOPHY IN MICROBIOLOGY

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Under the guidance of
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CERTIFICATE

This is to certify that this thesis entitled **"Cancer growth suppression using purified azurin from native *Pseudomonas* isolates."** is a bonafide research work done by **Mrs. Sereena M C.,** under my supervision and guidance in the Department of Life Sciences, University of Calicut, for the award of the degree of Doctor of Philosophy in Microbiology, under the faculty of Science of the University of Calicut. I also certify that the same has not been submitted for any other degree diploma or associateship in any other University.

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I also hereby certify that the corrections/suggestions from the adjudicators have been incorporated in the revised thesis. Content of the CD submitted and the hardcopy of the thesis is one and the same.

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The Institutional Animal Ethics Committee of Amala Cancer Research Centre (No.149/PO/Rc/S/1999/CPCSEA) unanimously approved the animal experiments of the Ph.D. Thesis work of Sereena M.C., Research Scholar, Microbiology, Department of Life Sciences, University of Calicut entitled **"Cancer growth suppression using purified azurin from native *Pseudomonas* isolates"** (Approval No.ACRC/IAEC/2017[5]) carried out under the guidance of Dr. Ramadasan Kuttan.

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DECLARATION

I, **Sereena M C**., hereby declare that this thesis entitled **"Cancer growth suppression using purified azurin from native *Pseudomonas* isolates"** is being submitted to the University of Calicut, in partial fulfillment of the requirement of the degree of Doctor of Philosophy in Microbiology under the faculty of Science. This thesis is the result of my work carried out in the department of Life Sciences under the guidance and supervision of Dr. Denoj Sebastian, Assistant Professor in Microbiology, Department of Life Sciences, University of Calicut. This thesis or any part thereof has not been submitted for any other degree, diploma or any other similar title of any university.

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Sereena M C

Dedicated to.....

All those who supported me in this endeavor

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LIST OF ACRONYMS USED

AGE	:	Agarose gel electrophoresis
BSA	:	Bovine serum albumin
BLAST	:	Basic Local Alignment Search Tool
CTAB	:	Cetyl trimethylammonium bromide
DAPI	:	4',6-diamidino-2-phenylindole is a fluorescent stain
DLA	:	Daltons Lymphoma Ascites
DNA	:	Deoxyribonucleic acid
DMEM	:	Dulbecco's Modified Eagle Medium
EDTA	:	Ethylenediaminetetraacetic acid
EYFP	:	Enhanced Yellow Fluorescent Protein
ECFP	:	Enhanced Cyan Fluorescent Protein
Etbr	:	Ethidium bromide
FBS	:	Fetal Bovine Serum
FDA	:	Food and Drug administration
FRET	:	Fluorescence Resonance Energy Transfer
FTIR	:	Fourier-transform infrared spectroscopy
FSC	:	Forward Scatter
HIV	:	Human Immunodeficiency Virus
HCT 15	:	Human Colorectal Carcinoma
IMViC	:	IMViC: Indole, Methyl red, Voges-Proskauer, Citrate
IPTG	:	Isopropyl β-D-1-thiogalactopyranoside
LB	:	Luria Bertani
LC-MS/MS	:	Liquid Chromatography with tandem mass spectrometry.
MALDI-TOF	:	Matrix Assisted Laser Desorption/Ionization Time of Flight

MEGA	:	Molecular Evolutionary Genetics Analysis
MCF7	:	Michigan Cancer Foundation
MCS	:	Multiple cloning sites
mM	:	Millimolar
MTT	:	3- (4,5-Dimethylthiazol-2-Yl)-2,5Diphenyltetrazolium Bromide
NCBI	:	National Center for Biotechnology Information
Ni NTA	:	Nickel-nitrilotriacetic acid
PAGE	:	Polyacrylamide gel electrophoresis
PBS	:	Phosphate-Buffered Saline
PCR	:	Polymerase chain reaction
RD	:	Restriction Digestion
rDNA	:	Ribosomal DNA
RNA	:	Ribonucleic acid
rpm	:	Rotation per minute
SDS	:	Sodium Dodecyl Sulfate
SW480	:	Spectral Karyotyping of the Human Colon Cancer Cellline
SSC	:	Side Scatter
UV	:	Ultra Violet