

**CYTOGENETIC AND PHYTOCHEMICAL ASPECTS
OF SOME SELECTED SPECIES OF *AMOMUM* ROXB.
(ZINGIBERACEAE)**

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

DOCTOR OF PHILOSOPHY IN BOTANY

By

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OCTOBER 2017**

DECLARATION

I, Sinitha K., hereby declare that the thesis entitled “**Cytogenetic and phytochemical aspects of some selected species of *Amomum Roxb. (Zingiberaceae)***” submitted to the University of Calicut, for the award of the degree of DOCTOR OF PHILOSOPHY IN BOTANY is a record of original research work done by me under the supervision and guidance of Dr John E. Thoppil, Professor, Department of Botany, University of Calicut and that it has not formed the basis for the award of any degree/diploma to any candidate of any University.

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This is to certify that the thesis entitled “**Cytogenetic and phytochemical aspects of some selected species of *Amomum* Roxb. (Zingiberaceae)**” submitted to the University of Calicut, for the award of the degree of DOCTOR OF PHILOSOPHY IN BOTANY is an authentic record of original research work done by **Sinitha K.** during the period of study (2012-2017) at the Cell and Molecular Biology Division, Department of Botany, University of Calicut under my supervision and guidance and that it has not formed the basis for award of any degree or diploma. Also certified that the contents in the thesis is subjected to plagiarism check using the software URKUND, and that no text or data is reproduced from others work.

Dr JOHN E. THOPPIL
Supervising Teacher

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Sinitha K.

ABBREVIATIONS

BHA	:	Butylated Hydroxy Anisole
BHT	:	Butylated Hydroxy Toluene
BSA	:	Bovine Serum Albumin
CA	:	Chromosome Aberrations
CFP	:	Cyan Fluorescent Protein
COX-2	:	Cyclooxygenase-2
DLA	:	Dalton Lymphoma Ascites cell lines
DMEM	:	Dulbecco's Modified Eagle's Medium
DMSO	:	Dimethyl Sulphoxide
DPPH	:	1,1-Diphenyl-2-Picrylhydrazyl
DW	:	Dry Weight
EAC	:	Ehrlich Ascites Carcinoma cell line
EDTA	:	Ethylene Diamine Tetra Acetate
ELISA	:	Enzyme Linked Immunosorbent Assay
ESI	:	Electron Spray Ionization
FBS	:	Fetal Bovine Serum
FRAP	:	Ferric ion Reducing Antioxidant Power
FRET	:	Fluorescent Resonance Energy Transfer
GC/MS	:	Gas Chromatography/Mass Spectrometry
GSH	:	Glutathione
H ₂ O ₂	:	Hydrogen Peroxide
HEPES	:	4-(2-hydroxyethyl)-1-piperazine ethane sulfonic acid
HPLC	:	High Performance Liquid Chromatography
HR-LC/MS	:	High Resolution-Liquid Chromatography/ Mass Spectrometry
HT 29	:	Human colorectal adenocarcinoma cell line

HTAB	:	Hexadecyl Trimethyl Ammonium Bromide
IC ₅₀	:	Inhibition Concentration 50%
IL	:	Interleukins
iNOS	:	inducible Nitric Oxide Synthase
LOX	:	Lipoxygenase
LPS	:	Lipopolysaccharide
µg/mL	:	microgram/milliliter
µM	:	micro Molar
mg/kg	:	milligram/kilogram
MI	:	Mitotic Index
min	:	minute
mM	:	milli Molar
MPO	:	Myeloperoxidase
MTT	:	3-(4,5-Dimethylthiazol-2-yl)-2,5-Diphenyltetrazolium Bromide
NBT	:	Nitro Blue Tetrazolium
NCCS	:	National Centre for Cell Sciences
NF-κB cells	:	Nuclear Factor Kappa light chain enhancer of activated B cells
NIST	:	National Institute of Standards and Technology
NO	:	Nitric oxide
NOS	:	Nitric Oxide Synthase
NSAIDs	:	Non Steroidal Anti-inflammatory Drugs
OD	:	Optical Density
PBS	:	Phosphate Buffered Saline
PG	:	Prostaglandins
RAW 264.7	:	Mouse leukaemic monocyte macrophage cell line
ROS	:	Reactive Oxygen Species

RPMI	:	Rosewell Park Memorial Institute Medium
RT	:	Retention Time
SCAT	:	Sensor for activated caspases based on FRET
SDS	:	Sodium Dodecyl Sulphate
SE	:	Standard Error
SOD	:	Superoxide Dismutase
TAE	:	Tris Acetate EDTA
TBA	:	Thio Barbituric Acid
TBARS	:	Thio Barbituric Acid Reactive Substances
TNF	:	Tumor Necrosis Factor
TpTz	:	2,4,6,-tripyridyl-s-triazine
v/v	:	volume per volume
w/v	:	weight per volume
WHO	:	World Health Organization
YFP	:	Yellow Fluorescent Protein