DECLARATION

I, **P. SELVAKUMAR** hereby declare that the thesis entitled "**PHYTOCHEMISTRY AND *IN VITRO* BIOLOGICAL ACTIVITY STUDIES OF *ALOCASIA* SPECIES**" submitted to Periyar University in partial fulfilment of the requirements for the award of the degree of Doctor of Philosophy in Chemistry is a record of original research work carried out by me under the guidance and supervision of **Dr. M. DEVI KANIAKUMARI M.Sc.,Ph.D., PGDCA**., Department of chemistry, Quaid-E-Millath Government College for Women, Chennai and that it has not formed before the basis for the award of any Degree / Diploma / Associateship / Fellowship or any other similar titles in this or any other University or Institution of higher learning.

Place:

Date: Signature of the Candidate

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P. SELVAKUMAR

ABBREVIATIONS

DPPH	-	2, 2-diphenyl-1-picrylhydrazyl
ABTS	-	2, 2' azino-bis (3-ethylbenzothiazoline-6-sulphonic acid)
cfu/ml	-	Colony Forming Unit per millilitre
DMSO	-	Dimethyl Sulphoxide
DNS	-	3,5-dinitrosalicylic acid
h	-	Hour
mg/Ml	-	Milligram per Millilitre
mL	-	10^{-3} liter(s) or milliliter(s)
min	-	Minutes
mm	-	Millimetre
ºC	-	Degree Celsius
%	-	Percentage
rpm	-	Revolution per minute
SD	-	Standard Deviation
SDA	-	Sabouraud Dextrose Agar
µg	-	Microgram
nm	-	nanometers or 10^{-9} meters
NA	-	Nutrient Agar
LD_{50}	-	Lethal Dosage 50
MTCC	-	Microbial Type Culture Collection and Gene Bank
IC	-	Inhibition concentration
TLC	-	Thin Layer Chromatography
UV	-	Ultra violet
FTIR	-	Fourier Transform Infra Red
NMR	-	Nuclear Magnetic Resonance
MS	-	Mass Spectroscopy
pH	-	Potential of Hydrogen
WHO	-	World Health Organization
A.Sanderiana	-	*Alocasia Sanderiana*

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PREFACE

In recent times, focus on plant research has increased all over the world and a large volume of evidence has been grooming together illustrating the immense potentiality of medicinal plants explored in various traditional systems. Research in traditional medicine has led to the development of many modern medicines. The thesis entitled "Phytochemistry and *in vitro* biological activity studies of *Alocasia* species**"** is an attempt to isolate and characterize the phyto constituents from the bioactive extracts of plant (*Alocasia Sanderiana* leaves, stem and root tubers) selected for these studies to unfold the antioxidants, anti-inflammatory and anti-diabetic properties.

Chapter-I

Comprises a general introduction, importance of herbal products in health care aspects explaining the extensive use of herbal medicine including screening natural sources such as plant extracts and microbial fermentation has led to the discovery of many clinically useful drugs. It also explains usage of herbal medicines for liver diseases. Breakthrough in the field of research on natural products. Role of natural products as antioxidants, anti-inflammatory and anti-diabetic activity.

Chapter-II

Describes the basic information regarding introduction about the plant *Alocasia Sanderiana.*, vernacular names, taxonomical classification, geographical distribution, plant description and historical usage along with the past the review of literature upto current date *Alocasia sanderiana* plant regarding the phytochemical analysis and isolation of secondary metabolites.

Chapter-III

Describes the research objectives of *Alocasia sanderiana.* To study about the phytochemical screening, antimicrobial, antioxidant, anti-inflammatory, anti-diabetic activity and isolation of new fractions of ethanolic extracts of leaf, stem and root tubers of *Alocasia sanderiana*.

Chapter–IV

Discussed about collection of plant parts and authentication. Phytochemical screening of various parts like plant leaf, stem and root tubers of *A.Sanderiana* were carried out using ethanol by adopting standard procedures. Antimicrobial activity, antioxidant activity, reducing power assay, anti-inflammatory activity and anti-diabetic activity of leaf, stem and root tubers of *A. Sanderiana* was determined by *in vitro* methods. New compound were isolated from leaf and characterized by various spectral techniques like IR, 1D NMR, 2D NMR and Mass spectrometry.

Chapter-V

Discussed about the results of phytochemical screening**,** biological activity (Antimicrobial, antioxidant, anti-inflammatory and anti-diabetic activity) of plant leaf, stem and root tubers of ethanolic extracts of *A.Sanderiana.* Isolation and characterization of the new compounds using analytical and spectral techniques such as elemental analysis, IR, ^{1}H -NMR, ^{13}C- NMR, EI-MS techniques.

Chapter-VI

Discussed about the summary and conclusion of phytochemical screening**,** biological activity (Antimicrobial, antioxidant, anti-inflammatory and anti-diabetic activity) of plant leaf, stem and root tubers of ethanolic extracts of *A.Sanderiana.* Isolation and characterization of the new compounds using analytical and spectral techniques.