

**TWO DAYS NATIONAL LEVEL CONFERENCE**

**ON**

**ROLE OF  
PHYTOCHEMICALS AND  
ADVANCED MATERIALS IN  
CANCER PREVENTION  
AND RESEARCH**

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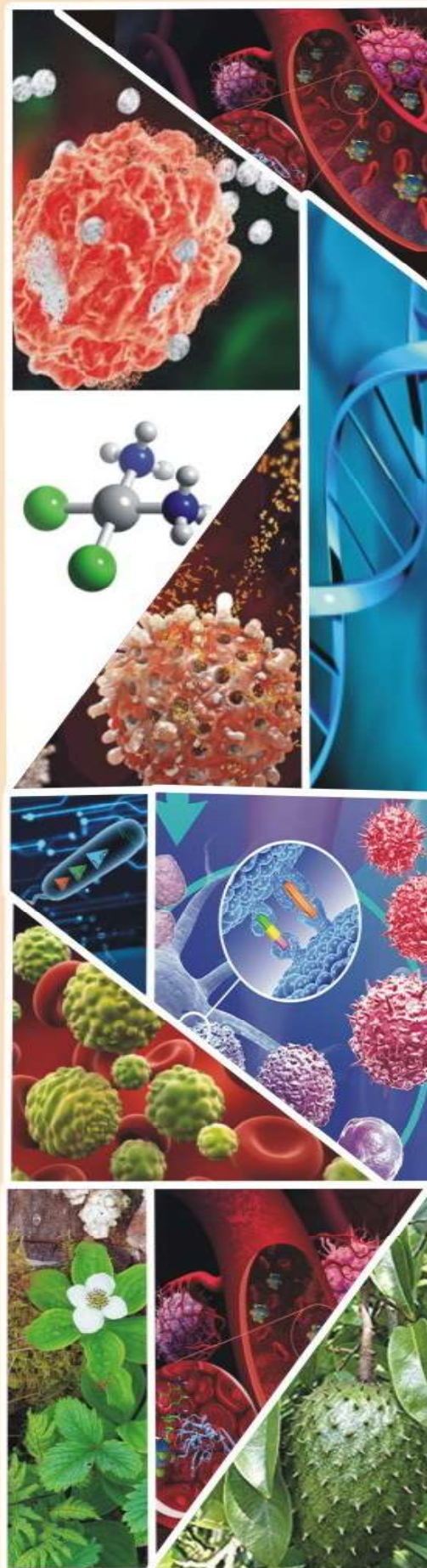


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## CONTENT

S.No	Title	Page
1.	INTERESTING MORPHOLOGY OF La doped $\text{CuC}_2\text{O}_4$ and Na doped $\text{CuC}_2\text{O}_4$ SYNTHESISED VIA THERMAL DECOMPOSITION <b><i>POONKODI K, ATHIRA. S, AKSHAYA, V. SAJANA. M.S. and SUBHAHARINI</i></b>	1
2.	EVALUATING PHARMACOGONOSTICAL AND PHYTOCHEMICAL CHARACTERS OF THREE IMPORTANT MEDICINAL PLANTS, <i>phyllanthus reticulatus</i> POIR., <i>AZIMA TETRACANTHA</i> LAM., AND <i>ZIZIPHUS OENOPLIA</i> L. INHABITING LOWER WESTERN GHATS OF POLLACHI TALUK, TAMILNADU, INDIA. <b><i>A.M. ANANDAKUMAR, N. SASIKUMAR, R. RAKKIMUTHU and P. SATHISHKUMAR</i></b>	9
3.	ZNO/ ZN -AL LDH COMPOSITE MATERIAL WITH SUPER PHOTOCATALYTIC ACTIVITY FOR ENHANCED ADSORPTION OF CONGO RED DYE <b><i>ANITHA VENKATASAMY and RAJALAKSHMI SUBRAMANIAN</i></b>	18
4.	A THERAPEUTIC APPLICATIONS OF NANOTECHNOLOGY IN CANCER DIAGNOSIS AND TREATMENT <b><i>S.BAGYALAKSHMI</i></b>	30
5.	SPECTRAL CHARACTERIZATION OF 1-(5-AMINO-2, 4-DINITROPHENYL) PYRIDINIUM CHLORIDE MONOHYDRATE <b><i>R.BABYKALA and DR.M. BUVANESWARI</i></b>	35
6.	WATER QUALITY INDEX AND CORRELATION STUDY FOR THE ASSESSMENT OF GROUNDWATER QUALITY AND ITS PARAMETERS OF MADATHUKULAM, TIRUPPUR DISTRICT, TAMIL NADU. <b><i>R.CHITRADEVI</i></b>	37
7.	STRUCTURE AND BIOLOGICAL STUDIES ON SOME SUBSTITUTED PIPERIDINE PHENYL HYDRAZINES <b><i>M. DINESH KUMAR and P. RAJESH</i></b>	43
8.	ISOLATION OF CARVONE AND OTHER PHENOLIC COMPOUNDS FROM <i>Nigella sativa</i> - AN REVIEW <b><i>A. GEETHAMANI, N. GOMATHI and G. ASWINI</i></b>	58
9.	A REVIEW ON PHYTOCHEMICAL PROFILING OF <i>Couroupita guianensis</i> AUBL. <b><i>VELLIANGIRI PRABHU and GOKILA PRIYA</i></b>	61

10. INVITRO ANTICANCER ACTIVITY OF *Plectranthus amboinicus* LEAVES ESSENTIAL OIL AGAINST CHANG LIVER CELL LINE 67  
**K.VIMALADEVI, R. MINI and N. MALATHI**
11. PHYTOCHEMICAL AND PHARMACOLOGICAL STUDIES OF *Orthosiphon stamineus*- AN UPDATED REVIEW 72  
**SARANYA K. S, KARTHIGAIPRIYA. M and POONKODI. K**
12. NOVEL TRANSITION METAL COMPLEXES WITH AMINOGUANIDINE AND 3-HYDROXY-2-NAPHTHOIC ACID AS LIGANDS – SYNTHESIS AND CHARACTERIZATION 79  
**PRABHA DEVI.B, KANCHANA.P, ARUNADEVI.N, M.SWATHIKA**
13. SYNTHESIS, DOPING AND CHARACTERIZATION OF N-GRAPHENE 80  
**KANDEEBAN, RAJAGOPALAN, S.DURGANANDINI, K.MANOJKUMAR, R.SUBHASINI, K. SAMINATHAN**
14. PHYTOCHEMICAL AND PHARMACOLOGICAL ACTIVITIES OF *Eupatorium adenophorum* SPRENG- A REVIEW 84  
**KARTHIGAIPRIYA, M. SARANYA K. S, and POONKODI. K**
15. CANCER FIGHTING FRUITS AND VEGETABLES 91  
**A. LOGAMADEVI**
16. ROLE OF PHYTOCHEMICALS IN MEDICINAL PLANT 96  
**N.SOUNDARRAJ, C.PRIYADHARSINI and K. KOUSALYA**
17. CHEMICAL COMPOSITION OF METHANOL EXTRACT OF *Physalis minima* 99  
**VELLIANGIRI PRABHU and MONIKA B**
18. A COMPARATIVE STUDY ON DEGRADATION EFFICIENCY OF PHENOL RED USING ZNO NANOPARTICLE 103  
**MUTHULINGAM. S, GREESHMA .K. P, HASEENA. Z, VARSHA SRI.G, JANANI.J, JEEVITHA.T**
19. METAMORPHOSIS OF FLORAL WASTE IN TO VALUABLE (ZnO) FABRICATED CQDS AND THEIR IMPACT ON CATALYTIC DEGRADATION OF INDUSTRIAL EFFLUENTS & PLANT GROWTH ENHANCEMENT - DIVINE FLOWERS WITH SOCIETAL APPLICATIONS. 104  
**S.MUTHULINGAM, K.P.GREESHMA and S.NITHISH**
20. INHIBITIVE ACTION OF HYDROXY PYRAZOLINE DERIVATIVES ON THE CORROSION OF MILD STEEL IN SULPHURIC ACID MEDIUM TOGETHER WITH QUANTUM CHEMICAL STUDIES 105  
**N.ANUSUYA, J SARANYA and S.CHITRA**

21.	A REVIEW ON COPPER FERRITE AND METAL DOPED COPPER FERRITE MATERIALS: SYNTHESIS AND ITS MAGNETIC PROPERTIES <i>A.NAGAVENI, M.ANUSUYA AND E.JAYANTHI</i>	115
22.	PHARMACOLOGICAL ACTIVITIES OF <i>Anisomeles malabarica</i> - A REVIEW <i>NARMADA B and MINI R</i>	119
23.	A SHORT REVIEW ON PHYTOPHARMACOLOGICAL STUDIES ON LOTUS FLOWER AND HIBISCUS FLOWER <i>VELLIANGIRI PRABHU and PRIYA</i>	126
24.	AN OVERVIEW ON THE ROLE OF ZINC OXIDE AND CERIUM OXIDE IN AGRICULTURE <i>M.PRIYA</i>	131
25.	PHYTOCHEMICAL ANALYSIS OF <i>Barleria prionitis</i> BY GCMS <i>K.VIMALADEVI and J.PRIYADHARSINI</i>	135
26.	EVALUATION of CHEMICAL CONSTITUENTS and BIOLOGICAL ACTIVITY of <i>Lantana camara</i> LEAVES ESSENTIAL OIL <i>Ms. MINI. R, Ms. K.VIMALADEVI and VASUKI.A</i>	139
27.	GREEN SYNTHESIS AND CHARACTERIZATION OF TiO <sub>2</sub> /SiO <sub>2</sub> /AG NANOPARTICLES FROM <i>Cardiospermum halicacabum</i> LEAF EXTRACT <i>RAJESWARI SIVARAJ, VINOTHINI S, PERIYANAYAKAM N and VENCKATESH R</i>	145
28.	ANTICANCER POTENTIAL OF ANTHOCYANINS - AN UPDATED REVIEW <i>R.RAKKIMUTHU, P.SATHISHKUMAR, A.M. ANANDAKUMAR AND D.SOWMIYA</i>	150
29.	SYNTHESIS AND CORROSION INHIBITIVE STUDY OF BENZODIAZEPINE DERIVATIVE AGAINST MILD STEEL CORROSION IN 1M HCL <i>T.SASIKALA</i>	154
30.	IN VITRO CYTOTOXIC ACTIVITY BETWEEN METHANOL EXTRACT AND ACTIVITY GUIDED FRACTION OF ACACIA CAESIA (L.) WILLD. <i>P. SATHISHKUMAR, R. RAKKIMUTHU, A.M. ANANDAKUMAR AND D. SOWMIYA</i>	155
31.	LOW DENSE SiO <sub>2</sub> NANO PARTICLES: SYNTHESIS AND CHARACTERIZATION <i>MANOJKUMAR.K, KANDEEBAN RAJAGOPALAN, S. VISHALEE and K. SAMINATHAN</i>	160

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## CHEMICAL COMPOSITION OF METHANOL EXTRACT OF *Physalis minima*

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### Abstract

The present study examines the nature of phytoconstituents from methanol extract of *physalis minima*. GC-MS analysis of *physalis minima* plant extract revealed the presence of six compounds. In the present study, the major chemical constituents are cyclopropane pentanoic acid, 2-undecyl-, methyl ester, trans- (31.425%), 1-(p-Toluidino)-1-deoxy-beta-d-iodopyranose (31.290%), cyclopentane undecanoic acid, methyl ester (28.427%) and the minor compounds are undecanoic acid, 11-bromo, methyl ester (4.564%), 10,122- octadecadiynoic acid(1.8884%), alpha-D-mannopyranoside, methyl 2,3,4,6-tetra-o-methyl (1.109%) respectively.

**Keywords:** *physalis minima* and GC-MS.

### Introduction

*Physalis* played as one of the largest genera in *Solanaceae* family with of 80 to 100 species can be found around the world. *Physalis minima* L. are one of the popular species which can be found throughout India, Baluchistan, Afghanistan, Tropical Africa, Singapore, Australia and Malaysia [1]. This herb is commonly known as Cape gooseberry, bladder cherry, pygmy ground cherry and pokok letup-letup. *Physalis minima* are annual or- short lived perennial plants with less hairy as compared to few other species. The berry like fruit is almost round in shape and entirely hidden in calyx [2]. The fruiting calyx is the distinct characters of *Physalis* and differentiates it from other genera in the *Solanaceae* family. This interesting plant grown very well in most of soil types but do well on sandy to gravelly loam under full of sun exposure [3]. *Physalis minima* tolerant to drought seasons and can grow up to 1.5 meter tall. It has broad leaves and grows rapidly on disturbed soil which makes it difficult to control. Whole body of the plant, from root to the shoot has been reported to be safe as traditional medicine except for calyx [4]. The fruit contained high amount of vitamin C (24.45 mg/100 ml of juices) and is considered to be diuretic, purgative and used to relieve pain and cure spleen disorder [5]. Phytochemical compounds are secondary metabolites produced by plant to act as protector against several of microorganisms, insects and higher herbivorous predators' infections [6]. Pharmaceutical industry nowadays is depending on medicinal plants to supply the raw materials for extraction of medicinally important compounds. The phytochemical compounds of plants have been used as therapeutic agent, new synthetic compound for drug formulations and as taxonomic markers for discovery of new compounds. Base compositions of more complex semisynthetic chemical compounds are also derived from phytochemical compounds of plants [7]. Unfortunately, statistics showed that demand on medicinal plants is increasing and exploring of new sources is encouraged. The literature review showed that the leaves, roots and fruits of *Physalis minima* have been used traditionally in the treatment of various ailments [1]. The extractions of *Physalis minima* plants

particularly from India and China reported to have numerous of antioxidants and anticancer activities [2], [8]. With this information, an attempt was made to study the different phytochemical compounds that presence in whole plant of *Physalis minima* L. from South India through GC-MS analysis.

## Materials and Methods

### Plant Material

Whole plant of *Physalis minima* L. were collected from commercial places of pollachi. The plant material was identified and authenticated by Department of Botany, NGM College, Pollachi, and Coimbatore.

### Isolation of Essential Oil

Whole plant of *Physalis minima* L (500kg) were collected and dried at room temperature  $\pm 30^{\circ}\text{C}$  for a period of 14 days and made into powder using homogizer. 100 grams of powdered plant materials of *Physalis minima* was soaked in 30 ml of methanol overnight. It was filtered through Whatmann filter paper No. 41. The filtrates were then concentrated and reduce the volume to 1 ml. The extract contained both polar and non-polar phytochemical components. The collected extract was transferred into a dark glass bottle and kept at a temperature of  $4^{\circ}\text{C}$  prior to GC-MS analysis.

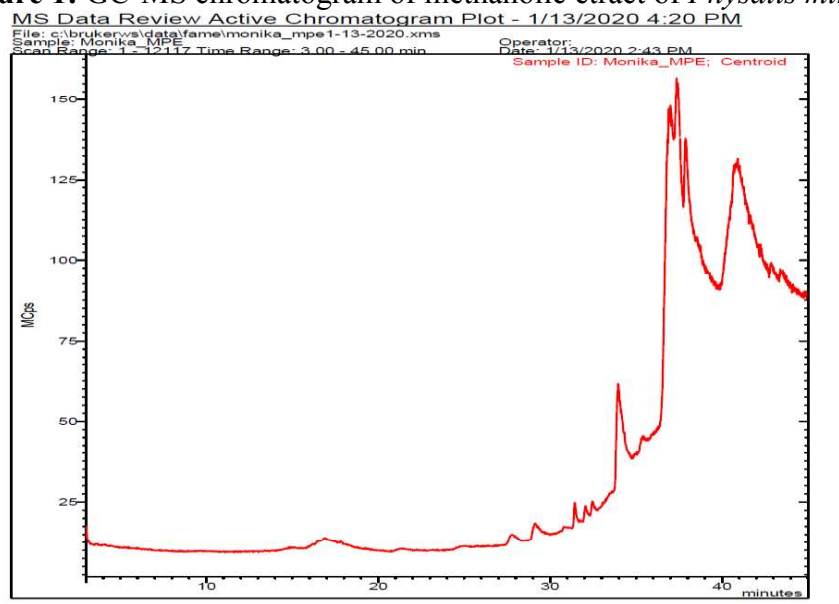
### GC-MS Analysis

GC-MS analysis of the phyto constituents of *Physalis minima* was carried out using thermo GC-trace ultra version: 5.0 coupled with thermo MS DSQ II instrument. Compounds were separated on DB-35, MS capillary standard non-polar column ( $30 \times 0.25\text{mm}$ ), film thickness  $0.25\mu\text{m}$ . Helium was used as the carrier gas and the temperature programming was set with initial oven temperature at  $70^{\circ}\text{C}$  and held for 2 minutes and the temperature of the oven was raised to  $260^{\circ}\text{C}$  for 10 minutes and raised  $6^{\circ}\text{C}$  per minute and final temperature was  $300^{\circ}\text{C}$  for 10 minutes. The sample of 100 ml was dissolved in 1 ml of acetone injected with split less mode. Mass spectra were recovered over 50-500 amu range with electron impact ionization energy 70eV, while injector and MS transfer line temperature were set at  $230^{\circ}\text{C}$  and  $280^{\circ}\text{C}$  respectively.

## Results and Discussion

### GC-MS Analysis

Based on the GC-MS analyses, the methanolic extractions of whole plant of *Physalis minima* contained numerous numbers of phytochemical compounds. The chemical components that had been identified, the percentage of peak area of each constituent and their retention time of the plant were listed in the **Table I**, and the GC-MS chromatogram were presented in **Fig. 1**. The major compounds that had been identified from the methanolic extract of whole plants were cyclopropane pentanoic acid, 2-undecyl-, methyl ester, trans- (31.425%), 1-(p-Toluidino)-1-deoxy-beta-d-iodopyranose (31.290%), cyclopentane undecanoic acid, methyl ester (28.427%) and the minor compounds are undecanoic acid, 11-bromo, methyl ester (4.564%), 10,122-octadecadiynoic acid (1.8884%), alpha-D-mannopyranoside, methyl 2,3,4,6-tetra-o-methyl (1.109%) respectively. In our present report showed the major and minor compounds are entirely different from other reports due to climatic and soil nature.

**Figure 1:** GC-MS chromatogram of methanolic extract of *Physalis minima***Table 1:** Chemical composition of methanolic extract of *Physalis minima*

SL.No	Retention Time	Compound Name	% of Compound
1.	16.731	10,122- octadecadiynoic acid	1.884%
2.	33.820	undecanoic acid, 11-bromo, methyl ester	4.564%
3.	35.286	alpha-D-mannopyranoside, methyl 2,3,4,6-tetra-o-methyl	1.109%
4.	37.156	p-Toluidino)-1-deoxy-beta-d-iodopyranose	31.290%
5.	37.649	cyclopropane pentanoic acid, 2-undecyl-, methyl ester, trans-	31.425%
6.	40.676	cyclopentane undecanoic acid, methyl ester	28.427%

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