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Archives of Applied Science Research, 2013, 5 (5):159-162  
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## GC-MS analysis and phytochemical screening of *Indoneesiella echioids* (L.) *Nees*

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### ABSTRACT

The present study deals with the phytochemical investigation of *Indoneesiella echioids*. It is an important medicinal plant worldwide trend towards the utilization of natural plant remedies has created an enormous need for the use of medicinal plants. The plant was extracted using chloroform. This study involves the preliminary phytochemical screening, separation and identification of compounds present in the chloroform extract of *Indoneesiella echioids*. The chloroform extract of plant was subjected to GC – MS Analysis. The results obtained after GC – MS studies were confirmed by spectral analysis.

**Key words:** *Indoneesiella echioids* (L.) *Nees*, Therapeutic use, Phytochemical screening

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### INTRODUCTION

The use of medicinal plants as a source of medicine has been inherited and is an important component of the health care system plant extracts and bioactive compounds which isolated from medicinal plants are used for antibacterial, antifungal and antiviral therapy[1]. The use of drugs derived from plants has been in practice for a very long time [13]. The plant based traditional medicine system continues to provide primary health care to more than three quarters of the world's population. All over the world, plant derived traditional medicine, therefore has an important role in the maintenance of health. Some major categories of plant derived products include personal care products and phyto-cosmetics, herbal medicines, natural health products and phyto-pharmaceuticals[2]. Literature survey is wide reported the biological activity of *Indoneesiella echioids*(L) *Nees*. The whole plant does not used as food, but the juice are traditional used to ulcer, headache, cough, anti asthma, and pesticides and Neurons protective. The active principles of many drugs found in plant are secondary metabolites[14]. The quantitative estimation of phyto constituents and trace elements of the plant study establishes the resources of proteins, carbohydrates, vitamins[3]. Today natural products derived from plants are being tested for presence of new drugs with new modes of pharmacological action [4].

Hence the present investigation is carried out to determine the possible chemical constituents of *Indoneesiella echioids* (L.) *Nees* by GC – MS studies.

## MATERIALS AND METHODS

### Collection of plants

The plant namely *indoneesiella echioides(L)Nees* were collected at kolli hills, Namakkal district, Tamil Nadu. It was identified and authenticated by botanically. Then the plant was washed thoroughly and subjected to drying in shadow till 20 days. This dried plant was powdered finally using a grinder. The sample is transferred into air tight container with proper labeling.

### Preparation of Plant Extracts

Crude plant extract was prepared by Soxhlet extraction method. About 50gm of powdered plant material was uniformly packed into a thimble and extracted with chloroform, extraction continues for 18 hours or till the solvent in siphon tube of an extractor become colorless. After that the extract was taken in a beaker and kept in a hot plate and heated at 30-40 °C till all the solvent got evaporated. Dried extract was stored in refrigerator at 4 °C.

The extract was tested for the presence of bioactive compounds by using standard methods[6].

## RESULTS AND DISCUSSION

The present study is carried out for phytochemical screening of *Indoneesiella echioids(L) Nees*. Alkaloids, carbohydrates, saponins, tannin, flavonoids and phenolic compounds are qualitatively analysed and the results are presented in table – 1

**GC – MS studies:** GC – MS studies were reported that the chloroform extract of the whole plant of *Indoneesiella echioids(L) Nees*. Many phytocomponents appearance in the plant of *Indoneesiella echioids. L.* (chloroform extract) are pointed out in Table -2

The peak at RT 130 with a peak area of 100% is lupanine. This compound is a alkaloid with molecular formula of  $C_{15}H_{24}N_2O$  and molecular weight of 248.36. lupanine is found to show antimicrobial, anti coronary, antioxidant and antiasthma activity.

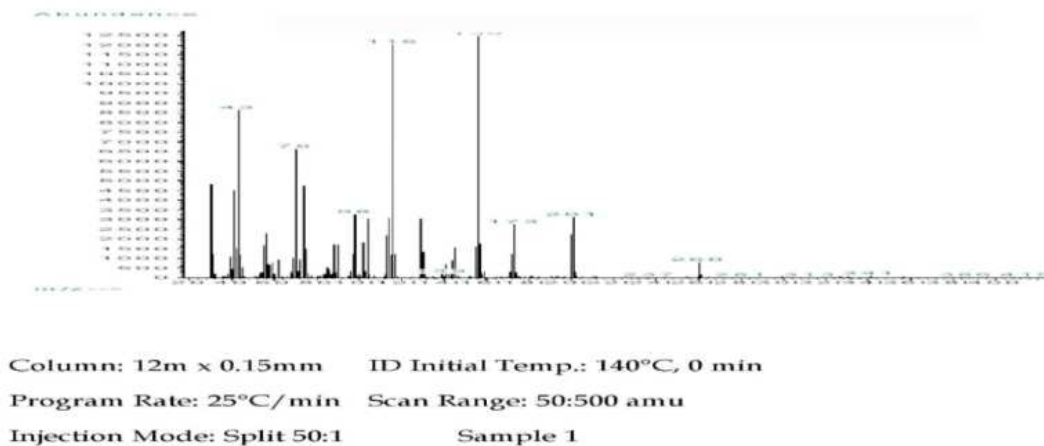
Responding to the peak at RT 116 and peak area 98% is 1,8 cineole. This compound is a monoterpenoid with a molecular formula and molecular weight of this compound is  $C_{10}H_{18}O$  and 154.249 respectively. This monoterpenoid compound is known to be antimicrobial, anti-inflammatory, anticancer, diuretic, antioxidant, pesticide and anti-tumor activity[9].

Phytol is found to be responsible for the peak at RT 173 with a peak area 40%. This Diterpen has the molecular formula of  $C_{20}H_{40}O$ . It has a molecular weight of 296.53. This compound has lot of activities like antimicrobial, anticancer, anti-inflammatory, diuretic, antioxidant, antitumour. It is also shown to be an immunostimulant, lipoygenase, inhibitor and pesticide activity[6].

The Kaempfeol is found to be responsible for the peak at RT 201 with a peak area 35%. This kaempfeol compound is a flavonol with a molecular formula of  $C_{15}H_{10}O_6$  and molecular weight is 286.23. This compound is found to show medicinal activity like antimicrobial, antiproliferative, anticancer, and anti-inflammatory activity. It is a poly phenol compound[7].

The  $\alpha$ -amino acid compound cysteine is found to be the cause of the peak at RT 70 with a peak area of 60%. This compound has the molecular formula of  $C_5H_9NO_3S$  and molecular weight of 121.16. It is mainly antioxidant properties and it has required the biological system.

The aroma 2,3-dihydro-3,5-dihydroxy-6-methyl-4(H)-pyran-4-one is found to be the responsible for the peak at RT 260 with a peak area 6%. This compound has the molecular formula is  $C_6H_8O_4$  and molecular weight is 144.12. It shows antibacterial activity[10,12].

Figure 1: GC – MS with the extract of *Indoneesiella echioids* (L.)Table 1: Preliminary phytochemical analysis in Sample *Indoneesiella echioids*

Name of the Test	Phytochemical constituents	chloroform Extract	Aqueous Extract
Mayer's test		+	-
Dragondraff test	Alkaloids	++	++
Wagner Test		+	++
Molish Test		++	+
Fehling Test	Carbohydrates	-	-
Benedicts Test		+	++
Foam Test	Saponins	+	+
Lead Acetate	Tannins	+	+
Ferric Chloride	Pseudo tannins	Condensed Tannin	Condensed Tannin
Ammonia	Chlorogenic Acid	++	+
Salkowaski	Steroidal Glycosides	-	-
H <sub>2</sub> SO <sub>4</sub>	Anthocyanin	-	-
Liebermann's Burchard Test	Steroidal Glycosides	-	-
H <sub>2</sub> SO <sub>4</sub>	Saponins Glycosides	+	+
Ammonia	Flavonoids	+	+
Shinoda's Test	Flavones	-	-
Ferric Chloride	Phenols	+	+
Sodium Chloride	Coumarin	+	+
Borntrager's Test	Anthracene Glycoside	-	-

+++ : High

++ : Moderate

+ : Present

- : Absent

Table – 2 Phyto chemical components identified for Sample *Indoneesiella echioids* (L.) *Nees* (GC –MS Study)

S. No	RT	Name of the Compound	Molecular Formula	Molecular Weight	Peak Area%	Compound Nature
1	70	Acetylcysteine	C <sub>5</sub> H <sub>9</sub> NO <sub>2</sub> S	163.19	6.4	Acetyl group
2	98	Cysteine	C <sub>3</sub> H <sub>7</sub> NO <sub>2</sub> S	121.16	3.1	α – amino acid
3	116	1,8 Cineole	C <sub>10</sub> H <sub>18</sub> O	154.249	11.67	Cyclic ether and Monoterpenoid
4	130	Lupanine	C <sub>15</sub> H <sub>24</sub> N <sub>2</sub> O	248.36	2.95	Alkaloids
5	173	Phytol	C <sub>20</sub> H <sub>40</sub> O	296.53	2.5	Di terpen
6	201	Kaempferol	C <sub>15</sub> H <sub>10</sub> O <sub>6</sub>	286.23	3.0	Flavonol
7	260	2,3-dihydro-3,5-dihydroxy-6-methyl-4(H)-pyran-4-one	C <sub>6</sub> H <sub>8</sub> O <sub>4</sub>	144.1253	0.6	Aroma Compound

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**CONCLUSION**

The chloroform extract of the studied plant contained many bioactive chemicals including alkaloids, glycosides, terpenoids, steroids, flavonoids, and tannins. The extract of *Indoneesiella echioids* (L.) Nees. Spectral data from GC – MS studies predicts that the major compounds are the Flavovol, Kaempfeol, Di terpen, phytol, Alkaloids, lupanine, amino acids, Cysteine. The other compounds are identified that mostly less activated compounds namely Acetylcysteine, aroma compound. Seven compounds are identified in *Indoneesiella echioids* (L.) Nees by GC – MS analysis.

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