Phytochemical investigation of *Merremia hederacea*

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**ABSTRACT**

The present research is designed to investigate the ethanolic extract of the medicinal plant *Merremia hederacea*, which contains alkaloids, steroids, carbohydrates, terpenoids, tannin, phenolic compounds and flavonoids and all of them were confirmed through phytochemical screening and GC-MS analysis. The phytoconstituents present in this medicinal plant have been found to be studied by standard methods.

**Key words:** *Merremia hederacea*, phytochemicals, GC/MS.

**INTRODUCTION**

Medicinal herbs are moving from fringe to mainstream use with a greater number of people seeking remedies and health approaches free from side effects caused by synthetic chemicals. Recently, considerable attention has been paid to utilize eco-friendly and bio-friendly plant based products for the prevention and cure of different human diseases. Considering the adverse effects of synthetic drugs, the Western population is looking for natural remedies, which are safe and effective. It is documented that most of the World’s population has taken in traditional medicine; particularly plant drug for the primary health care. The Indian flora offers a variety of plants having medicinal properties. These plants can be exploited to find out effective alternative to synthetic drugs.

*Merremia hederacea* (Burm.f.) Hallier f., belongs to Convolvulaceae family, twinning or prostrate herb. The plant has slender stems; glabrous or pubescent, sometimes rooting at the nodes. The leaf-blades are ovate in outline, 1.5-5cm long and 1.25-4cm wide. Petioles are 0.5-6cm long and sparsely tuberculate. Besides, the pedicels are 2-4mm long. The sepals are obovate to spatulate, notched at the apex, and are sparsely pilose. The corolla is in white or yellow, 6-12mm long, glabrous outside, pilose at the base. Capsules are globose or conical, somewhat 4-angled, 5-6mm long, with valves that are reticulately wrinkled. The seeds of *M. hederacea* are pubescent or glabrous and 2.5mm long.
Merremia hederacea can be used to treat colds, febrile disease, sunstroke, oliguria, tonsil inflammation, laryngitis as well as leucorrhoea. The seeds can be used to treat fevers, colds, sore throats, haematuria, conjunctivitis and boils. Leaves of M. hederacea can be used in the treatments of chapped hands and feet. No culinary and other uses have been reported for this herb. The genus Merremia reports to contains phenolics, flavonoids, flavonoids sulphates, aliphatic pyridoline amides, tropane containing alkaloid, the species possess to antioxidant, anti inflammatory, alpha amylase inhibitory activity, The scientific knowledge of the research plant M. hederacea can least explored.In the present study, the ethanolic extracts for the presence of some secondary metabolites. In order to find out the steroids, alkaloids, triterpenoids, proteins, aminoacids, phenolics, flavonoids, glycosides, essential oils, tannins and saponins etc., The aim of the present work the present work is to phytochemically screened by the chemical test and GCMS analysis of ethanolic extract of Merremia hederacea [1-11].

MATERIALS AND METHODS

The plants were collected from the Cavery river basin Thiruvarur district, Tamil Nadu, India. They were identified and authenticated by the Raphiant Herbarium of St.Joseph’s College (Autonomous), Tiruchirappalli, Tamil Nadu, India.

Preparation of powder and extract
Leaves (1Kg) was shade dried, powdered and extracted with ethanol for 6-8 hours using soxhlet apparatus. The extract was then filtered through muslin, evaporated under reduced pressure and vacuum dried to get the viscous residue. The ethanolic extracts of the plant was used for GC-MS analysis. 2 µl of the ethanolic leaf extract of Merremia hederacea was employed for GC/MS analysis.

Phytochemical screening
Phytochemical screening of the plant leaf extract was carried out as per the methods and tests given by Harbone to decipher the presence or absence of various phytoconstituents.[12]

GC-MS Analysis.
Instrument Details:
Make: PerkinElmer Clarus 500
Column Type: Capillary Column Elite-5 (5%Diphenyl /95% dimethylpolysiloxane)
Column length: 30m
Column id: 250µm
RESULTS AND DISCUSSION

The results of the phytochemical analysis in the present study are in accordance with these findings (Table-1). From the above studies on the phytocomponents of *M. hederacea* have found that the plant contains phenols, flavonoids, terpenoids, tannins, absence of saponins and protein. GC-MS studies have been increasingly applied for the analysis of medicinal plants as this technique has proved to be a valuable method for the analysis of non polar components and volatile essential oil, fatty acids, lipids and alkaloids. The ethanol extract of *M. hederacea* was subjected to GC-MS analysis which retrieved 7 major phytocompounds. The detailed tabulation of the GC-MS analysis has been given in Table-2. The results of this study may serve as a useful supplement for further detailed investigations on this plant.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Tests</th>
<th><em>Merremia hederacea</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Alkaloids</td>
<td>(+)</td>
</tr>
<tr>
<td>2.</td>
<td>Amines</td>
<td>(+)</td>
</tr>
<tr>
<td>3.</td>
<td>Carbohydrates</td>
<td>(+)</td>
</tr>
<tr>
<td>4.</td>
<td>Cardiac Glycosides</td>
<td>(-)</td>
</tr>
<tr>
<td>5.</td>
<td>Terpenoids</td>
<td>(+)</td>
</tr>
<tr>
<td>6.</td>
<td>Steroids</td>
<td>(+)</td>
</tr>
<tr>
<td>7.</td>
<td>Saponins</td>
<td>(-)</td>
</tr>
<tr>
<td>8a.</td>
<td>Tannin</td>
<td>(+)</td>
</tr>
<tr>
<td>8b.</td>
<td>Phenolic compounds</td>
<td>(+)</td>
</tr>
<tr>
<td>9.</td>
<td>Proteins &amp; Free amino acids</td>
<td>(-)</td>
</tr>
<tr>
<td>10.</td>
<td>Flavonoids</td>
<td>(+)</td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td>(+)</td>
</tr>
</tbody>
</table>

Table 2: GC-MS profile of the plant *Merremia hederacea*
CONCLUSION

These studies suggest that the leaves extracts of *Merremia hederacea* possessed lots of phytochemical constituents and have a potent as a drug. Future research is needed to design this herb as a drug after completing the molecular level research work.

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