

# Qualitative investigation of Phytochemical compounds present in the Traditional Wound healer *Hemigraphis Colorata* by GC-MS analysis

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**Abstract:** Phyto- compounds are chemical compounds that are produced by plants. Thousands of phytochemical compounds are produced by naturally that are non-essential aspect originate in the plant nutriment. All the plant parts clamp the presence of phyto-compounds like leaves, vegetables and roots and play an important role in defence mechanism against environmental threats. Currently modern medicines practices the use of phyto-compounds for producing various medicines hence the importance of meaningful the action of each compounds are vary essential. In this study we investigate the innumerable phytochemical compounds present in *Hemigraphis Colorata* via GC - MS analysis.

**Key words:** Medicinal plants, Phto-chemical compounds.

## 1. Introduction

Nowadays Plant based treatments and medicines are playing vital role in the area of Ayurveda. Supreme of populates believing Ayurveda outstanding to the non-side effects of the treatment. Due to the era of modern life style nature will unnatural desperately and new life style illnesses are being happened. Largely peoples depending modern treatments because of the lack of time and betrothed life panaches. The history of “herbalism” is closely tied with the history of medicine from prehistoric times up until the growth of the germ theory of disease in the 19th century. Plants have been used for medical treatments during the human history, and such traditional medicine is still widely used today.

*Hemigraphis colorata* is a tropical perennial herb chiefly grown as an ornamental indoor and outdoor plant, because of its attractive and vivid foliage. In folk medicine, the leaves are ground into a paste and applied on fresh cut wounds to promote wound healing and used to treat anaemia. Traditional knowledge regarding the usage of this plant differs but the scientific study available to support this knowledge is much limited (Devi Priya, 2013). Medicinal plants used as medicine should therefore be studied for safety and efficacy. Gas

Chromatography Mass Spectroscopy, a hyphenated system which is a very compatible technique and the most commonly used technique for the identification and quantification purpose. The unknown organic compounds in a complex mixture can be determined by interpretation and also by matching the spectra with reference spectra (Ronald Hites, 1997).

## 2. Materials and methods

### 2.1. Collection of medicinal plants

The Plant selected based on the oral literature collected from Traditional herbal practitioners in the Wayanad District, Kerala. The plants were collected from Pulpally region, wayanad and it was authentically identified from M.S. Swaminathan Foundation, (Community Agro Biodiversity Centre) Puthurvayal, Kalpetta, Wayand District, Kerala.

### 2.2. Plant part used for study

The plant *Hemigraphis colorata* (Blume) is a versatile tropical low creeping Perennial herb that reaches a height of 15 to 30 cm, which is the native of tropical Malaysia. The leaves are opposite, ovate to chordate, serrate – crenate about 2 to 8cm long and 4 to 6cm wide, bearing well- defined veins and are slender, lance shaped with toothed, scalloped or lobed margins. They are greyish green stained with red purple above and darker purple beneath (Graf, 1982). The leaf of *Hemigraphis colorata* was collected and washed thoroughly using tap water and kept for shade dry.

### 2.3. Preparation of Methanolic extract

Finely ground sample is placed in a porous bag made from a strong filter paper which is place, is in lodging the shelter of the Soxhlet apparatus. The Soxhlet extraction process was through using methanol (99.8% assays) as extraction solvents. 250 mL of solvent was poured into the round bottom extraction flask and placed on the heating mantle. The sample holding portion of apparatus was placed in the extraction chamber. Finally, the condenser was placed on top of the extraction flask and all these parts were fixed vertically. The soxhilet extraction processes were carried out at different intervals and collect the extracted sample from chamber, and allow evaporating and extracted crude were analysed by GCMS after the soxhlet extraction process.

## 2.4. Determination of specific compounds by GC-MS

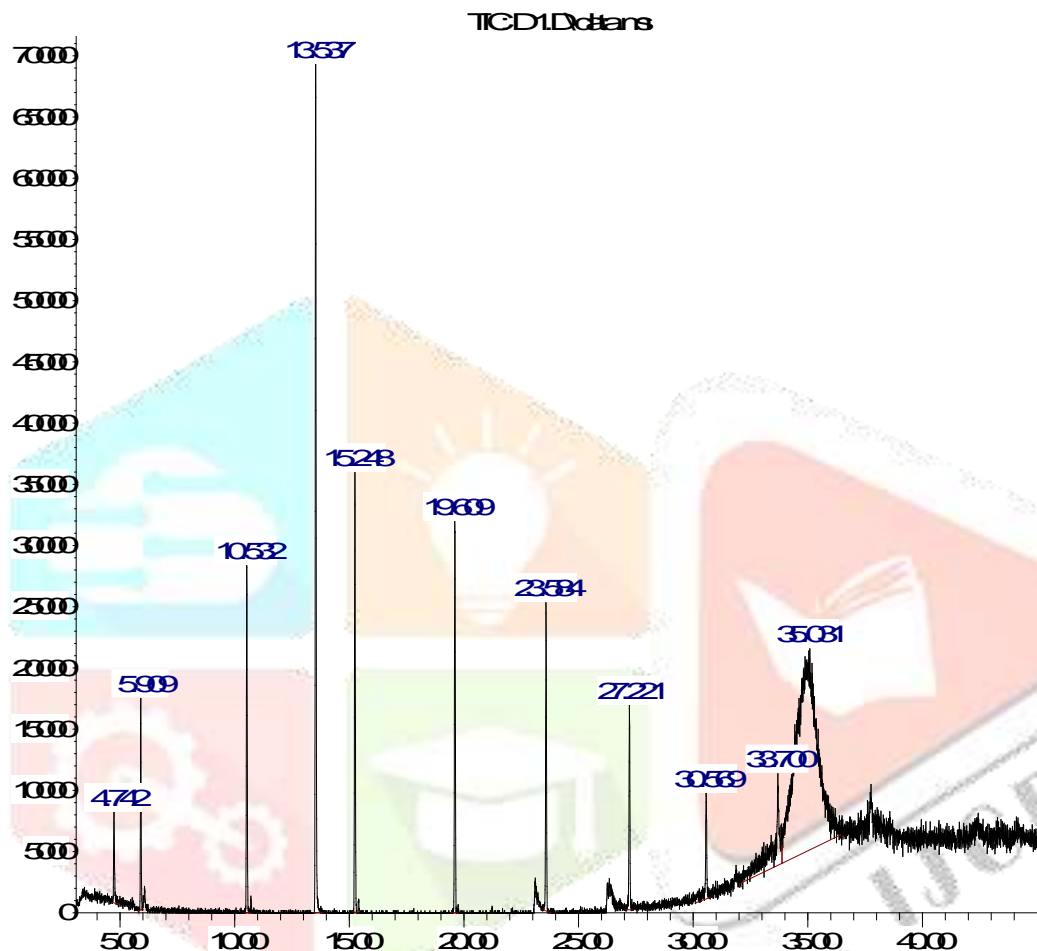
The methanolic extract of *Hemigraphis colorata* leaf was subjected to GC-MS analysis. Chromatographic separation was carried out from Department of Applied chemistry, Cochin University of Science and Technology, Cochin, Kerala using Agilent Technologies-7890 GC System, 5975C inert MSD. The column used was Agilent 190913-433; 325°C capillary column measuring 30mX250µm with a film thickness of 0.25µm. The carrier gas used was Helium at a flow rate of 1.1 ml/min. 1µl sample injection volume was utilized. The inlet temperature was maintained as 100 - 250°C. The mass spectra of compounds in samples were obtained by electron ionization (EI) at 70 eV, and the detector operated in scan mode from 20 to 600 amu. Identifications were based on mass spectral matching with standard compounds in NIST and Wiley libraries. The essential chemical constituents were identified by matching mass spectra with spectra of reference compounds in mass spectral library of National Institute of Standards and Technology (NIST 147). The relative amounts of individual components were expressed as percent peak areas relative to total peak area.

## 3. Result and discussion

The methanolic extract of *Hemigraphis colorata* used for Gas chromatography mass spectroscopy analysis. The water layer separated from methanolic extract. Figure 1 showing the separated compounds identified via GC- MS. The peak chromatogram was identified and was compared with the database of GC-MS library (NIST and Wiley libraries).

Figure: 1- Screening of specific compounds using GC-MS analysis

Abundance



Time>

Table - 1 – Phytochemicals identified in the methanolic extract of *Hemigraphis colorata* by GC-MS Peak Report.

Peak	R. Time	IUPAC Name;; common name	Chemical formula
1	4.740	Isophorone (1H-Pyrazole, 4,5-dihydro-5,5-dimethyl-4-isopropylidene)	C <sub>9</sub> H <sub>14</sub> O

2	5.908	1-Undecanol	$\text{CH}_3(\text{CH}_2) \text{OH}_{10}$
3	10.531	5-Octadecene, (E)	$\text{C}_{18} \text{H}_{32}$
4	13.535	Phenol, 2,4-bis(1,1-dimethylethyl)	$2,6-((\text{CH}_3)_2\text{C})_2\text{C}_6\text{H}_3\text{OH}$
5	15.246	9-Eicosene, (E)	$\text{C}_{20} \text{H}_{40}$
6	19.606	E-15-Heptadecenal	$\text{C}_{17}\text{H}_{32}\text{O}$
7	23.583	Trifluoroacetoxy hexadecane	$\text{C}_{18}\text{H}_{33}\text{O}_2$
8	27.222	Carbonic acid octadecyl 2,2,2-trichloroethyl ester	$\text{C}_{11}\text{H}_{19}\text{C}_{13} \text{O}_3$
9	30.569	2- Bromopropionic acid	$\text{CH}_3 \text{CHBrCOOH}$
10	33.699	Silicic acid	$\text{H}_2\text{SiO}_3$
11	35.033	3-Hydroxy-4-nitrobenzoic acid	$\text{HOC}_6\text{H}_3(\text{NO}_2)\text{CO}_2 \text{H}$

*Hemigraphis colorota* an important plant adapted to India is a versatile low creeping perennial herb that reaches a height of 15-30 cm (Subramoniam *et al.*, 2001; Anitha *et al.*, 2012; Silja *et al.*, 2008). The plant is known by several names such as Aluminium plant, Cemetery plant, Metal leaf, Red flame Ivy, Waffle plant, Java Ivy etc. In Kerala, the plant is popular in the name ‘murikootti’ or ‘muriampacha’ because of its incredible potency to heal wounds (Priya, 2012; Subramoniam *et al.*, 2001). The leaf has metallic purple lustre on the upper surface and a solid dark purple on the ventral sides. In folklore, the juice of the leaf is applied directly on fresh wounds to stop bleeding (Silja., 2008). The phytoconstituents of *Hemigraphis colorota* are phenols, saponins, flavonoids, terpenoids (Sheu *et al.*, 2012), coumarins, carbohydrates, carboxylic acid, xanthoproteins, tannins, proteins, alkaloids, steroids and sterol (Saravanan *et al.*, 2010). These phytochemicals provide curative property. The crude leaf paste provides excision wound healing (Bhargavi *et al.*, 2011; Pawar and Toppo, 2012).

In our present study we investigated the GC – MS screening of *Hemigraphis colorota* using methanol as solvent. 11 compound was detected (Table: 1) and identified using NIST and Wiley libraries. The plant used in

many regions of South India as traditional wound healer. *Hemigraphis colorata* holding varieties of phyto-constituents and invaluable medicinal applications due to the compounds present in it. Currently World Health Organization also recommends the usage of traditional herbs for various treatments and advised to validate the scientific evidence of such medicinal properties.

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