

Photochemical Analysis of *Mallotus philippensis* (*Ureirom-laba*) used for the Healing of Covid-19 by GCMS Analysis

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Abstract— *Mallotus philippensis* (Lam.) Muell.Arg. (*Ureirom-laba*) was collected from Imphal West District, Manipur, a common medicinal plant for various pharmacological activities like anthelmintic (expelling worms) properties, as a purgative, with parts of the plant used for skin conditions, bronchitis, and abdominal ailments. Phytochemicals were analysed by using GCMS spectroscopy of the ethanol extracts indicates the presence of nine compounds viz. 2-Propenoic acid, Butyl Ester, Trifluoromethyl T-Butyl Disulfide, 7-Chlorobicyclo [4.1.0] Hept-3-Ene, (E)- But-2-Enyl ethyl Carbonate, 1,3,6-Heptatriene, 5- Methyl, 1-Dodecanol, 2-Methyl-(S)-, Propionic acid, 3-Iodo-, Octadecyl ester, 11,14-Eicosadienoic acid, TMS Derivative, 3,5-Dimethyl-3-heptanol, etc. The traditional methods of preparation is supported by scientific findings.

Keywords— *Mallotus philippensis*, *Ureirom-laba*, GCMS spectroscopy, Healing of Covid-19.

I. INTRODUCTION

A new disease called coronavirus (covid 19) was detected from Wuhan City located in China which is a life-threatening disease caused by Severe Respiratory Syndrome Coronavirus 2 (SAR-CoV-2) that become one of the major global health issues. The WHO (World Health Organization) declared covid 19 as a pandemic disease if one get to prevent from this disease by boosting the immune system. Medicinal plants play an important role in treating various diseases and ailments in our day to day life due to presence of phytochemical and bioactive compound. Manipur a land for it medicinal value has traditional medicines suggests some plants for prevention, treatment and rehabilitation of the diseases of COVID-19.

The use of medicinal plants has increased during the COVID-19 pandemic as a private behavior. A lot of misinterpretations of the use of medicinal plants to treat or prevent COVID-19 have been spreading throughout in Manipur which need to be managed. These plants which are used in day to day life but people are mostly unaware of the various health benefits of them. Now it's high time to make the general masses aware about the benefits of our own traditional medicinal value which is use for different disease treatment and prevention. In this regard, different medicinal plants which are vast reservoir of bioactive compounds with broad therapeutic, antiviral and immunomodulatory properties, have been as boon to combat with covid 19. Here, the latest updates on traditional medicines proposed for treatment of COVID-19 by using GC-MS analysis by a common medicinal plant which is used for this disease by the communities of Manipur.

Phytochemicals are responsible for medicinal activity of plants these are non-nutritive chemicals that have protected from various diseases [1,2]. The major constituent consists of alkaloid, flavonoids, saponins, phenolic compounds, phytosterols, proteins and aminoacids, gums and mucilage and lignin[3].

II. MATERIALS AND METHODS

Mallotus philippensis (Lam.) Muell.Arg. locally called as *Ureirom-laba* in Manipuri, known as kamala tree or red kamala or kumkum tree, due to the fruit covering, which produces a red dye. *Mallotus philippensis* is under the family Euphorbiaceae (Figure 1) is a middle sized tree, used to produce yellow dye and herbal remedies. It

produces rottlerin, a potent large conductance potassium channel opener. reported to have wide range of pharmacological activities. It is anthelmintic (expelling worms) properties and as a purgative, with parts of the plant used for skin conditions, bronchitis, and abdominal ailments.



Figure 1: *Mallotus philippensis* fruiting stage

Spectrometry (GC-MS) is a systematic technique that have been used in the identification of bioactive molecules in plants. GC-MS has two advantages over other spectroscopic techniques. One, the capillary column has good separation precision and can produce a high – quality chemical finger print that can be used to interpret bio active molecules. Secondly, the special data base on the information of the chemical composition of the plant extract which would be important in the structural elucidation and in the synthesis of novel drug candidate molecules and nutraceutical products[4]. The indigenous knowledge on the use of plant is one of the determining factor that helps in defining the cultural identities and provides link with the previous knowledge of their use[5].

III. RESULTS AND DISCUSSION

Identification of active compounds by GCMS technique of *Mallotus philippensis* (*Ureirom-laba*) is shown in Table 1: Compound no. 1 of Fig.2 i.e. 2-Propenoic acid is used in the production of hygienic medical products. In case of Trifluoromethyl T-Butyl Disulfide (Fig.2 No 2), among them, most of the compounds were found to have fluorine or fluorine-containing functional groups exhibiting numerous pharmacological activities. No. 3 indicates (7-Chlorobicyclo [4.1.0] Hept-3-Ene) Molecular Weight 128.60 g/mol Computed by PubChem 2.1 (PubChem release

2021.05.07) having many pharmacological activities. No. 4 indicates that (E)- But-2-Enyl ethyl Carbonate, is Computed by PubChem 2.2 (PubChem release 2025.09.15). Compound no. 5 of Figure 2 i.e. 1,3,6-Heptatriene, 5- Methyl Computed by PubChem 2.2 (PubChem release 2025.09.15). No. 6: 1-Dodecanol, 2-Methyl-(S)-: Computed by PubChem 2.2 (PubChem release 2021.10.14) (Table 1).

No. 7 Propionic acid, 3-Iodo-, Octadecyl ester: Provided herein are compounds and pharmaceutical compositions of formula I where R1, R2, R3, R4, R5, X and R6 are as described herein. Also provided pharmaceutically acceptable salts or stereoisomer(s) of these compounds. In addition methods are provided for antagonizing the action of an α 4-integrin to treat various pathophysiological conditions (Form PCT/ISA/210 (second sheet) (January 2015). No. 8: 11,14-Eicosadienoic acid,TMSDerivative: 11,14-Eicosadienoic acid, methyl ester (C₂₁H₃₈O₂) is a fatty acid methyl ester (FAME) characterized by a 20-carbon chain with double bonds at positions 11 and 12. Its molecular weight is 322.53 g/mol, and it exhibits a monoisotopic mass of 322.287.

This compound is naturally occurring in diverse biological sources, including algal extracts (e.g., *Arthrospira platensis*), fungal endophytes (e.g., *Aspergillus* spp.), and plant species such as *Berberis hispanica* and *Chukrasia velutina*, having Biological Activities: Demonstrated antibacterial, antibiofilm, antioxidant, and anticancer properties. However, in the present study the compound is a new one with Molecular weight of 380.7, retention time of 37.750 min recorded from *Mallotus philippensis* which have been reported from other plants. Lastly No. 9: 3,5-Dimethyl-3-heptanol: Computed by PubChem 2.2 (PubChem release 2025.09.15), this compound is highly toxic to human having eye damage, skin irritation and organ damage, etc., as this is poisonous compound it will be helpful in cancer diseases (Table 1).

Medicinal plant based drugs have shown the added advantage of being simple effective, free from side effects and offer a broad spectrum of activity with great emphasis on preventive action of chronic and degenerative diseases. Medicinal plants are the richest bio-resource of drugs of traditional medicines, modern medicines, nutraceuticals, food

supplements, folk medicines, pharmaceutical intermediates and chemical entities for synthetic drugs. The medicinal plants have chemical substances called phyto chemicals that produce various physiological action on the human body [6].

A number of epidemiological studies have linked phytochemicals with a series of bioactivities associated with health benefits. The bioactivity of many phytoconstituents is believed to be higher in

the form in which they are found in nature [7,8] (Behera et al., 2022). The phytochemical characterization of bioactive compounds using GC-MS of *Mallotus philippensis* (*Ureirom-laba*) collected from Imphal West District of Manipur has not yet been done till date. Therefore, The aim of the present study is to identify the phytochemicals in the Leaves of *Ureirom-laba* collected from Imphal West District of Manipur and to subject it by using GCMS analysis is the first of its kind.

Figure 2: Identification of active compounds by GCMS technique of *Mallotus philippensis* (*Ureirom-laba*)
SA3_SD Scan EI+ TIC 9.07e7

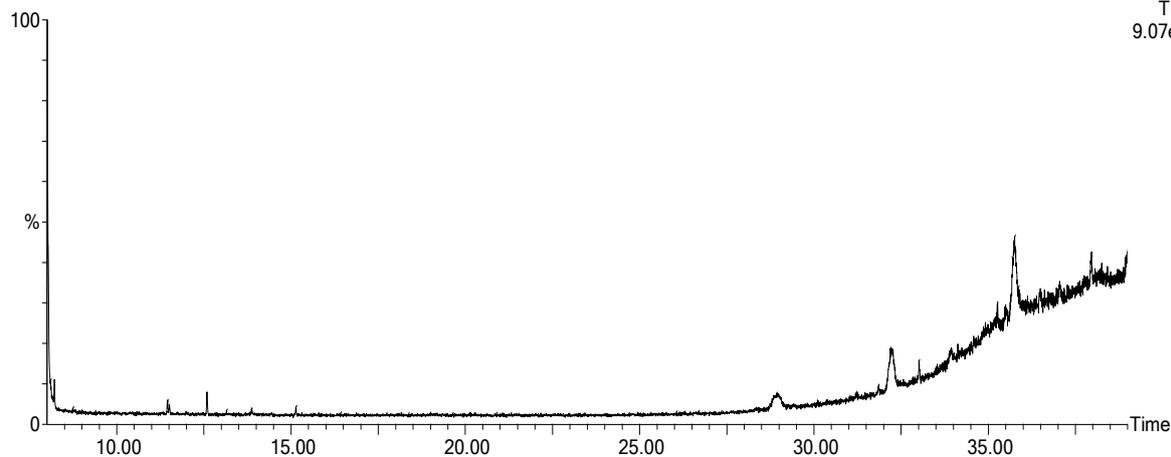
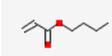
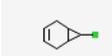
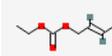
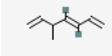
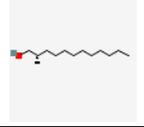
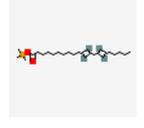
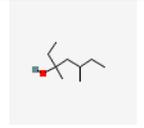


Table 1: Identification of active compounds by GCMS technique of *Mallotus philippensis* (*Ureirom-laba*)

Sl No	Compound Name	R.T.	Area	Area%	M.W. (g/mol)	Formula	Structure
1.	2-Propenoic acid, Butyl Ester	8.749	147,560.5	0.506	128.169	C ₇ H ₁₂ O ₂	
2.	Trifluoromethyl T-Butyl Disulfide	11.465	118,451.6	0.406	190.3	C ₅ H ₉ F ₃ S ₂	
3.	7-Chlorobicyclo [4.1.0] Hept-3-Ene	12.590	187,983.0	0.644	128.6	C ₇ H ₉ Cl	
4.	(E)- But-2-Enyl ethyl Carbonate	13.881	73,997.9	0.254	144.17	C ₇ H ₁₂ O ₃	
5.	1,3,6-Heptatriene, 5-Methyl	15.151	76,747.3	0.263	108.18	C ₈ H ₁₂	

6.	1-Dodecanol, 2-Methyl-(S)-	32.223	1,050,288.1	3.599	200.36	C ₁₃ H ₂₈ O	
7.	Propionic acid, 3-Iodo-, Octadecyl ester	35.755	3,002,980.8	10.291	452.5	C ₂₁ H ₄₁ IO ₂	
8.	11,14-Eicosadienoic acid, TMS Derivative	37.750	151,635.1	0.520	380.7	C ₂₃ H ₄₄ O ₂ Si	
9.	3,5-Dimethyl-3-heptanol	37.960	610,093.7	2.091	144.25	C ₉ H ₂₀ O	

IV. CONCLUSION

The presence of nine compounds viz. 2-Propenoic acid, Butyl Ester, Trifluoromethyl T-Butyl Disulfide, 7-Chlorobicyclo [4.1.0] Hept-3-Ene, (E)- But-2-Enyl ethyl Carbonate, 1,3,6-Heptatriene, 5- Methyl, 1-Dodecanol, 2-Methyl-(S)-, Propionic acid, 3- Iodo-, Octadecyl ester, 11,14-Eicosadienoic acid, TMS Derivative, 3,5-Dimethyl-3-heptanol, etc., from the traditional medicine *Mallotus philippensis* (*Ureiros-laba*) of Manipur and identification of active compounds by GCMS technique from the traditional methods of preparation is supported and recommended by scientific findings. Scientific characterisation of the herbal remedies can contribute to the endorsement of traditional therapies in the modern health care systems [8, 9, 10, 11, 12].

The results of the phytochemical screening of the present study indicates the presence of secondary metabolites such as Alkaloids, Glycosides, flavonoid, saponins, phenols, carbohydrates, terpenoid, steroid, amino acid and complemented by GC-MS spectrometry. The GC-MS analysis revealed twelve chemical constituents in methanolic rhizome extract of *Curcuma amada*. The biological activity of the compound identified through GC-MS were studied and the compound exhibits anti-inflammatory, anti-oxidant, anti-fungal, anti-bacteria, analgesic, anti-cancer. Due to the presence of these phytochemicals, *Mallotus philippensis* may be considered as the source of medicine. Therefore, further investigation and proper isolation of more active compounds should be carried out [13,14,15,16,17,18]

V. ACKNOWLEDGEMENTS

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Conflict of Interest

Authors declare that there is no conflict of interest.

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