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LC-MS Analysis of crude extract of Arial Part of Rivea Hypocretariformis.

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Abstract— ***The aim of the present study is to investigate the crude extract of Arial Part of Rivea Hypocretariformis Phytochemicals compounds using LC-MS. The shade dried powder of Arial Part of Rivea Hypocretariformis was extracted with mixture of Methanol, Water and chloroform (4:4:2) and crude was obtained. The LC-MS analysis was performed by LCMSQTOF 1260 Infinity model with the using of MassHunter Quantsoftware. The LC-MS analysis shows different peaks with low and high molecular weight determining the presence of 34 phytochemicals compounds. The phytochemicals compounds in the Arial Part extract of Rivea Hypocretariformis have been screened by using METLIN Data base. The presence of these compounds may proceed to find out different therapeutic activities.***

Keywords- Rivea Hypocretariformis, Ethanol extract; LC-MS analysis; phytochemical Compounds.

I. INTRODUCTION

Since many years, people around the world have used herbal derived remedies. Traditional remedies is the sum of the understanding, skill and practice based on the theory, thinking and experiences indigenous to different culture that are used to maintain health, as well as to prevent, diagnose, get better or treat physical and mental poor health [1]. In developing countries, the practice of medicine still relies heavily on plant and herbal extracts for the treatment of human ailments. Dietary agents consist of a wide multiplicity of biologically active compounds that are everywhere in plants, and many of them have been used as traditional medicines [2, 3, 4]. An estimate of the World Health Organization (WHO) states that about 85-90% of the world's population consume traditional herbal medicines.[5]. Selection of active components from plants has direct to the development of new medicinal drugs which have efficient defence and treatment role against different diseases [6]. LCMS, 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 explanation and also by corresponding the spectra with reference spectra [7].
Rivea Hypocretariformis is an important medicinal plant in the Indian system of Medicine. It is commonly known as '*Phang*' which grows in Monsoon session. The leaves of the 'Phang' are used for making traditional food in India, Pakistan and Afghanistan. Arial Part is used as a potent medicine. Arial Part is use as venom. The Arial Part is supposed to be useful in treatment of hysteria and nervous disorders. Therefore this is an attempt to determine the phytochemical compounds present in the crude extract of Arial Part of *Rivea Hypocretariformis* by LC-MS technique.

II. METHODS AND MATERIAL

(A) Collection and Identification of Plant materials

Dry Arial Parts of Rivea Hypocretariformis were collected from Khavad which is located in Mehsana District, Gujarat, India. This Arial Part was identified and authenticated by Dr. K.J.Bhatt, Assistant Professor- Botany Department, Pramukh Swami Science And H.D.Patel Arts College, Kadi. The Arial Parts were shade dried and ground into fine powder. The powdered materials were stored in air tight polythene bags till use.

(B) Preparation of extracts

The dried Arial Parts were extracted with Methanol, Water and chloroform using Soxhlet extractor. Obtained extract is concentrated with rotary evaporator till to dry powder was obtained. Than after concentrated extract is analyzed by LC-MS technique.

(C) Liquid Chromatography-Mass spectrometry (LC-MS) analysis

The Liquid Chromatography-Mass spectrometry (LC-MS) analysis was done by LCMSQTOF 1260 Infinity model with the help of MassHunter Quantsoftware. The ZORBAX 300 C18 Colum (4.6*100 mm, internal diameter of the Colum 3.5 mm), was used for analysis at room temperature. Acetonitrile and water with 0.1 % concentration of formic was used as Mobile Phase at constant flow rate of 1 ml/min at 90:10 ration for 2 minute and after 5 minute ration was 70:30, then up to 12 minute ratio was 0:100 and up to 15 minute ratio was 90:10.Total run time was 15 Minutes. And during this time 10µl sample was used. The mass range is 162-786amu. Total LC-MS running time was 15 minutes. The detection employed in METLINData Base.

III.RESULTS AND DISCUSSION

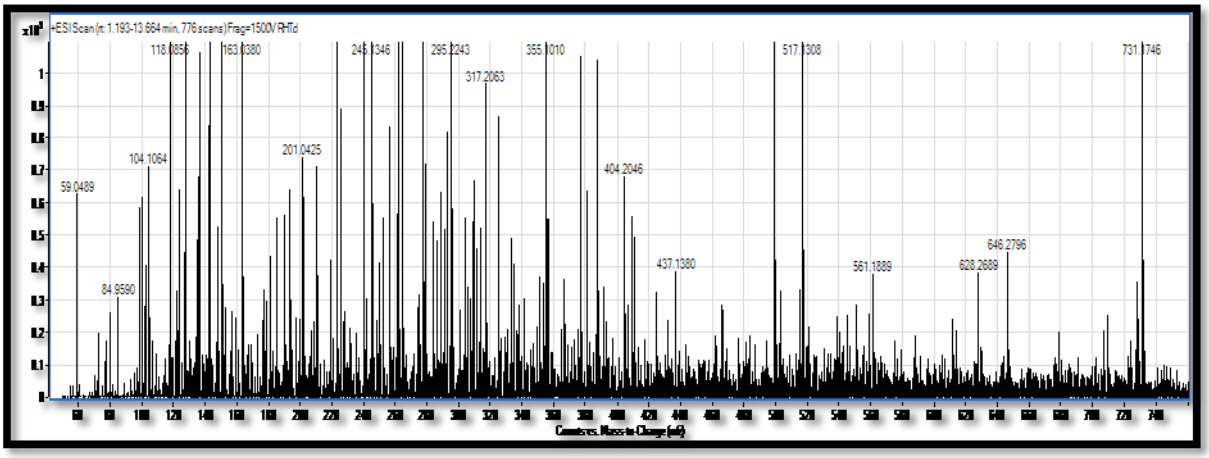

Fig. 1: The LC - MS Chromatogram of crude extract of Arial Parts of Rivea Hypocretariformis
LC–MS chromatogram of the Methanol, Waterand chloroform (4:4:2) extract of Arial Part of *Rivea*

Hypocretariformis(Fig. 1) clearly shows 34 peaks indicating the presence of 34 phytochemical compounds. The classification of the phytochemical compounds was base on the peak area, retention time and molecular formula. The table 1 shows the compound name with its molecular formula, mass and Retention time. The results reveal the presence of Proansamitocin(443.2304),Symlandine(381.2154), (4E,6E,d14:2)sphingosine(241.2049),2-hexyl-decanoic acid(256.2396),Cochlearine(261.1367),2,2,4,4,-Tetramethyl-6-(1-oxopropyl)-1,3,5-cyclohexanetrione(238.1211),6-C-Glucopyranosylpilloin(476.1305),3-hexanoyl-NBD Cholesterol(662.4413),Artelastochromene(486.2039),8-trans-[2-(6-Benzoyloxy-4-hydroxy-2-methoxy-3-methylphenyl) ethenyl]-5-methoxyflavan-7-ol(538.1983),Arg Arg Gln(458.2691),8-Hydroxyluteolin 8-glucoside(464.0936),GlcAbeta-Cer(d18:1/18:0)(741.575),4-Methylaminobutyrate (117.0784),6-C-Glucopyranosylpilloin(476.1), N-Cyclohexylformamide(127.0991),8E-Tetradecenyl acetate(254.2248),Ala His Asn(340.1497),Trp Arg Asp(475.2162),3'-Deoxymaysin(560.1535),3-Hydroxycoumarin(162.0309),14,14,14-Trifluoro-11E-tetradecen-ylacetate(308.1958),Spectinomycin(332.1591),14,14,14-Trifluoro-11E-tetradecenyl acetate(308.1961), Lymecycline(602.2599),5Z-Tridecene(182.2041),Lauroyl-EA(243.2199),16-hydroxy hexadecanoic acid(272.2345), Decenedioicacid(200.105),Dicyclohexylamine(181.1839),3,4-Dihydroxyphenyl ethanol(154.0635),Crotamiton(203.1319),10E,12Z-Tetradecadienyl acetate(252.2087),Labienoxime(209.178).The spectrum sketch out of LC-MS confirmed the presence of 34 components with the retention time 11.842,11.844,8.104,13.68,10.016,9.761,8.97,22.359,8.564,7.1,7.294,8.217,22.351,1.924,9.473,1.875,13.328,5.407,6.254,7.257,2.748,11.713,11.273,12.334,11.176,11.658,9.429,12.203,10.148,10.019,6.482,3.279,12.967,9.835,min respectively which is shown in Figure.1. The individual fragmentation patterns of necessary components were illustrated in Figures A-S. The phytochemical compounds recognized through LC-MS analysis showed many biological activities are listed in Table 2.

Table 1: Phytochemical compounds identified in crude extract of Arial Parts of Rivea Hypocretariformis by LC-MS analysis.

Sr. No.	Name	Formula	Mass	RT
1	Proansamitocin	C25 H33 N O6	443.2304	11.842
2	Symlandine	C20 H31 N O6	381.2154	11.844
3	(4E,6E,d14:2) sphingosine	C14 H27 N O2	241.2049	8.104
4	2-hexyl-decanoic acid	C16 H32 O2	256.2396	13.68
5	Cochlearine	C15 H19 N O3	261.1367	10.016
6	2,2,4,4,-Tetramethyl-6-(1-oxopropyl)-1,3,5-cyclohexanetrione	C13 H18 O4	238.1211	9.761
7	6-C-Glucopyranosylpilloin	C23 H24 O11	476.1305	8.97
8	3-hexanoyl-NBD Cholesterol	C39 H58 N4 O5	662.4413	22.359
9	Artelastochromene	C30 H30 O6	486.2039	8.564
10	8-trans-[2-(6-Benzoyloxy-4-hydroxy-2-methoxy-3-methylphenyl)ethenyl]-5-methoxyflavan-7-ol	C33 H30 O7	538.1983	7.1

11	Arg Arg Gln	C17 H34 N10 O5	458.2691	7.294
12	8-Hydroxyluteolin 8-glucoside	C21 H20 O12	464.0936	8.217
13	GlcAbeta-Cer(d18:1/18:0)	C42 H79 N O9	741.575	22.351
14	4-Methylaminobutyrate	C5 H11 N O2	117.0784	1.924
15	6-C-Glucopyranosylpilloin	C23 H24 O11	476.1305	9.473
16	N-Cyclohexylformamide	C7 H13 N O	127.0991	1.875
17	8E-Tetradecenyl acetate	C16 H30 O2	254.2248	13.328
18	Ala His Asn	C13 H20 N6 O5	340.1497	5.407
19	Trp Arg Asp	C21 H29 N7 O6	475.2162	6.254
20	3'-Deoxymaysin	C27 H28 O13	560.1535	7.257
21	3-Hydroxycoumarin	C9 H6 O3	162.0309	2.748
22	14,14,14-Trifluoro-11E-tetradecenyl acetate	C16 H27 F3 O2	308.1958	11.713
23	Spectinomycin	C14 H24 N2 O7	332.1591	11.273
24	14,14,14-Trifluoro-11E-tetradecenyl acetate	C16 H27 F3 O2	308.1961	12.334
25	Lymecycline	C29 H38 N4 O10	602.2599	11.176
26	5Z-Tridecene	C13 H26	182.2041	11.658
27	Lauroyl-EA	C14 H29 N O2	243.2199	9.429
28	16-hydroxy hexadecanoic acid	C16 H32 O3	272.2345	12.203
29	Decenedioic acid	C10 H16 O4	200.105	10.148
30	Dicyclohexylamine	C12 H23 N	181.1839	10.019
31	3,4-Dihydroxyphenyl ethanol	C8 H10 O3	154.0635	6.482
32	Crotamiton	C13 H17 N O	203.1319	3.279
33	10E,12Z-Tetradecadienyl acetate	C16 H28 O2	252.2087	12.967
34	Labienoxime	C13 H23 N O	209.178	9.835

IV. CONCLUSION

In the present study, 34 phytochemical constituents have been identified from the ethanol extract of Arial Parts of *Rivea Hypocretariformis* by Liquid Chromatogram - Mass Spectrometry (LC - MS) analysis. The presence of these phytochemical constituents justifies the use of this plant for various ailments by traditional practitioners. Isolation of individual photochemical constituents and subjecting it to biological activities are being undertaken.

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