



The GC MS Study of One Ayurvedic Preparation Amrithamehari Churnam

Z. Edel Queen¹, M.R. K. Rao^{2*}, Jecinta Anthony³, K Prabhu⁴, W.M. S. Johnson⁵, B. Shanthi Balasubramanian⁶, Lakshmi Sundaram, Shruthi Dinakar⁸

¹Sr. Lecturer, Dept of Anatomy, Sivaraj Naturopathy Medical College, Salem, Tamil Nadu, India.

²Professor, Dept of Industrial Biotechnology, Bharath University, Chennai, Tamil Nadu, India.

³Professor, Dept. of Anatomy, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.

⁴Associate Professor, Dept of Anatomy, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.

⁵Professor and Head, Dept of Anatomy, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.

⁶Professor, Dept of Biochemistry, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.

⁷V Clin Bio Labs, Sri Ramachandra University, Chennai, Tamil Nadu, India.

⁸Ayurvedic Practitioner, Kottakkal Arya vaidya Sala, Chennai, Tamil Nadu, India.

*Corresponding author's E-mail: mrkroa1455@gmail.com

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ABSTRACT

Amrithamehari churnam is an Ayurvedic formulation for the treatment of diabetes, weight loss and bladder disorders. The present study deals with the GC MS analysis of Amrithamehari churnam. Fifty different peaks were observed indicating various biomolecules. It was observed that there is an indication of the presence of some compounds such as Pyridinium, 1-(2-hydrazino-2-oxoethyl)-, chloride, Arsonous dichloride, methyl-, 1-Dodecane, 2-Methoxy-4-vinylphenol, 1-Undecanol, 1-hexadecanol, Ar-tumerone, Tumerone, Curlone, 4-Isoquinolinecarboxylic acid, 2, 3, 5, 6, 7, 8-hexahydro-3-oxo-, 1-Docosene, Squalene, á-Sitosterol, Benzenepropanoic acid, 3, 5-bis(1,1-dimethylethyl)-4-hydroxy etc. The medicinal values of each compound have similarity with that of the main drug, Amrithamehari churnam. Further work is in progress to prove the efficacy of this drug by standard methods.

Keywords: Amrithamehari churna, Diabetes, GC MS, Tumerone, Curlone, Sitosterol.

INTRODUCTION

Ayurveda is an age old Indian medical practice which deals with almost all the diseases. Majority of Indian population use one form or the other of Ayurvedic and Sidhha preparation for common ailments. Of late due to lack of pharmacological, toxicological and statistical data on the role of these traditional practices, many questions are emerging about the safety, efficacy and side effects.

It is pertinent to collect the data for these medicines about the short term and long term side effects, pharmacological, pharmacokinetic, and toxicological and other modern parameters.

This exercise will go a long way in establishing this great medical science back to its glory. Some workers have started this process of establishing the efficacy of these medicines and the list is growing.¹⁻¹⁹

Diabetes is a silent killer and causes progressive health in the body as time passes. This disease is one of the major causes of morbidity and mortality world over.

The modern medicine for diabetes depends on external support by providing insulin.

But this mode of treatment has its own deficiencies. Ayurveda has many anti-diabetic medicines which not only control the sugar levels in the body but it can also rejuvenate the pancreatic cells to produce insulin.

The important feature of Ayurvedic treatment is Pathya or Food control along with medication. Coupled with

strict food regimen and proper medication, ayurveda gives an effective treatment for diabetes.

There are a number of medicines in Ayurveda for the treatment of Diabetes manufactured by standard pharmacies, like Amrithamehari churnam (Kottakkal Arya Vaidya sala), Vasanth Kusumakar (Dabur), Tribangshila (Zandu), Madhumehari granules (Baidyanath), Hyponidd (Charak), Glymin (Kerala Vaidyasala), Diabecon (Himalaya), Glucomap (Maharshi) etc.

Amrithamehari churnam is in herbal powder form used for the treatment of diabetes. It is also known as Amritadi churnam.

Amrithamehari Churnam consists of the following ingredients.

Each 10 gm of Amrithamehari churnam contains:

Amrita (*Tinoapora cordifolia*) - 1.667 gm.

Meharimula (*Gymnema sylvestre*) - 5.000 gm.

Dhatri – Amalaki (*Embelica officinalis*) - 1.4667 gm.

Ratri – turmeric (*Curcuma longa*) - 1.667 gm.

The dosage ranges from 3 to 10 grams depending on the sugar levels of the patient.

This medicine is prescribed along with some adjuvant like hot water, Dhanwantara ghritam, Vastyamayantakam ghritam etc.

The medicine should be taken according to the prescription of an ayurvedic practitioner strictly.



Following is the description of the medicinal roles of each of the constituent plants of Amrithamehari Churma:

Amruta (Guduchi) - Indian Tinospora (stem) – *Tinospora cordifolia*

This plant medicinal properties like anti-diabetic, anti-periodic, anti-spasmodic, antiinflammatory, anti-arthritis, antioxidant, anti-allergic, anti-stress, anti-leprotic, anti-malarial, hepato protective, immune modulatory and anti-neoplastic activities. (Upadhaya)²⁰

Meharimula (*Gymnema sylvestri*)

The medicinal properties of *Gymnema* were reviewed by Tiwari.²¹ This plant has anti-diabetic, hypolipidemic and atherosclerotic, antimicrobial, anticancer, anti-inflammatory and antioxidant, Antiarthritic, Antibiotic and Antimicrobial, Anticancer and Cytotoxic, Antihyperlipidemic, Immunostimulatory and Hepato protective activities.²²⁻³⁶

Amalaki – Indian gooseberry fruit – *Embolica officinalis* Gaertn.

Amla has multifarious medicinal properties such as antipyretic, analgesic, as skin care lotion, antioxidant and also used to treat Gonorrhoea, nausea, vomiting, indigestion, nose bleeding etc.^{37,38}

Nisha – Turmeric (Rhizome) – *Curcuma longa*

Turmeric has wide applications in food, medicine and preservation. Turmeric is anti-inflammatory, antimicrobial, preservative, antifungal, anticancer, cardio protective, hyperglycemic and anti-diabetic.^{39,40}

Among the four constituents of this medicine *Gymnema sylvestri* is present in maximum quantity as compared to the other three. In Sanskrit *Gymnema* is known as Mehari, i.e. remover of *meha* or sugar. Thus its antidiabetic nature is very prominent in this drug. The present work deals with the GC MS analysis of Amritamehari churnam to find the type of bio molecules present in it.

MATERIALS AND METHODS

Amrithamehari churnam was procured from standard Ayurvedic shop at Chennai and was subjected to GC MS analysis after following the procedure.

RESULTS AND DISCUSSION

The GC MS analysis graph is shown in Fig 1 and Tab 1.

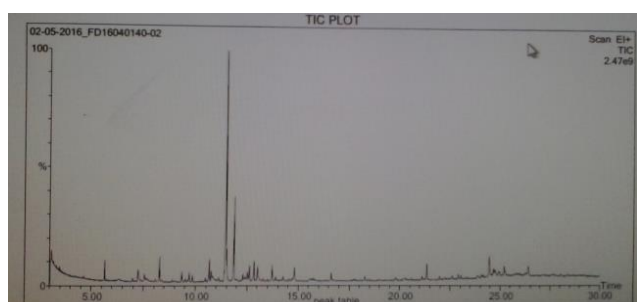


Figure 1: The GC MS graph of Amrithamehari churna.

Table 1: Indicates the Retention time, % area of each peak and the probable molecular name and structure with reference to standard Chemical Library.

S. No	RT	Area%	Name
1	3.087	15.54	$CH_3C(O)CH_2CH_2OH$
2	3.484	8.68	Benzene, 4-ethyl-1,2-dimethyl-
3	3.974	2.85	Pyridinium, 1-(2-hydrazino-2-oxoethyl)-, chloride
4	4.225	2.98	Arsonous dichloride, methyl-
5	4.586	0.42	1-Propanol, 2-methyl-1-[1-(hydroxymethyl)cyclopropyl]
6	4.645	0.95	Benzene, 1-chloro-4-(chloromethyl)-
7	4.814	0.35	2-Propanol, 1-bromo-
8	5.643	1.01	1-Dodecene
9	6.285	0.43	Benzofuran, 2,3-dihydro-
10	7.236	1.42	2-Methoxy-4-vinylphenol
11	7.551	0.62	Ethanone, 1-(2,4-dichlorophenyl)-
12	7.627	0.63	2,6-Dichloroacetophenone
13	8.274	1.42	1-Undecanol
14	9.348	0.72	Benzene, 1-(1,5-dimethyl-4-hexenyl)-4-methyl-
15	9.704	0.70	Phenol, 2,4-bis(1,1-dimethylethyl)-
16	9.856	0.51	Cyclohexene, 3-(1,5-dimethyl-4-hexenyl)-6-methylene-, [S-(R*,
17	10.492	0.33	Benzenepropanoic acid, á,á-dimethyl-, methyl ester
18	10.667	1.43	1-Hexadecanol
19	10.760	0.64	7-Methoxymethyl-2,7-dimethylcyclohepta-1,3,5-triene
20	10.824	0.70	2,4-Dichlorobenzamide
21	11.128	0.35	Tricyclo[7.1.0.0[1,3]]decane-2-carbaldehyde
22	11.460	14.55	Ar-tumerone
23	11.507	1.20	Tumerone
24	11.863	5.78	Curlone
25	12.295	0.50	2-Cyclohexen-1-one, 5-methyl-2-(1-methylethyl)-
26	12.417	0.65	Benzonitrile, 2-(4-methylphenyl)-
27	12.517	0.74	Pentadecane, 2-methyl-2-phenyl-
28	12.616	1.16	3,7-Cyclodecadien-1-one, 3,7-dimethyl-10-(1-methylethylidene)-
29	12.838	1.34	1-Nonadecene
30	13.007	1.62	3-Buten-2-one, 4-(4-hydroxy-3-methoxyphenyl)-
31	13.719	1.22	4-Isoquinolinecarboxylic acid, 2,3,5,6,7,8-hexahydro-3-oxo-
32	14.250	0.43	(E)-2-Isopropyl-5-methylphenyl 2-methylbut-2-enoate

33	14.559	0.39	4-Pyridinol 3,5-dichloro-2-phenyl-
34	14.810	1.40	1-Docosene
35	15.604	0.50	2,4-Dichloro-6-methyl-1,5-naphthyridine
36	15.709	0.33	Z,E-2,13-Octadecadien-1-ol
37	16.619	0.75	1-Nonadecene
38	18.282	0.35	1-Nonadecene
39	21.334	1.00	Squalene
40	22.606	0.37	E-8-Methyl-9-tetradecen-1-ol acetate
41	22.904	0.48	Cholesta-4,6-dien-3-ol, (3 α)-
42	23.049	0.35	Cholest-5-en-3-ol (3 α)-, carbonochloridate
43	23.855	0.47	Spiro-6-(bicyclo[3.2.1]octane)-2'-(oxirane), 7,8-
44	24.444	1.82	α -Sitosterol
45	24.648	0.51	α -Amyrin
46	24.742	0.73	5H-3,5a-Epoxyaphth[2,1-c]oxepin, dodecahydro-3,8,8,11a-
47	25.197	0.64	Stigmast-4-en-3-one
48	26.265	0.45	1-Heptatriacotanol
49	26.399	1.06	Benzenepropanoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-
50	27.630	0.43	9-Octadecenoic acid (Z)-, phenylmethyl ester

Among the 50 different peaks observed there were some compounds which were likely to be present in large quantities and their medicinal roles are described hereunder:

1. Pyridinium, 1-(2-hydrazino-2-oxoethyl)-, chloride. This compound is used for preparation of medicines for treating burns, male infertility, cold prevention for children, and as thrombosis resisting compound.
2. Arsonous dichloride, methyl-. This compound works as antibacterial.
3. 1-Dodecene is used as cosmetic agent.
4. 2-Methoxy-4-vinylphenol. This compound has anti-inflammatory role. (Jeong)⁴¹
5. 1-Undecanol has antibacterial activity. (Togashi)⁴²
6. 1-Hexadecanol is used as cosmetic.
7. Ar-tumerone, Tumerone and Curlone are known as antimicrobial. (Huang)⁴³
8. 4-Isoquinolinecarboxylic acid, 2, 3, 5, 6, 7, 8-hexahydro-3-oxo-. This compound is antibacterial, cytotoxic and antioxidant.
9. 1-Docosene is Antimicrobial
10. Squalene is a skin protective compound used in cosmetics. (Jankasem)⁴⁴

11. α -Sitosterol is known to reduce cholesterol, controls benign prostrate hypertrophy and controls inflammation.
12. Benzene propanoic acid, 3, 5-bis (1,1-dimethylethyl)-4-hydroxy- is a known Antioxidant.

Thus it is evident that the compounds, whether present in major quantity or in minor quantity, should have some role in the activity of Amritamehari churnam. This is a preliminary investigation which is being followed by study of other parameters to establish the scientific efficacy of Amritamehari churnam.

CONCLUSION

From the above discussion it is clear that Amritamehari churnam contains some important compounds which have activities similar to that of Amritamehari churnam. This is only a preliminary study and further work is on to prove the medicinal efficacy of this medicine.

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