

The Gas Chromatography Mass Spectroscopy Analysis of One Unani Drug, "Roghan Surkh"

Hassan Mohammad M¹, Janaki CS², Rao MRK^{3*}, Prabhu K⁴, Deepa K⁵, Franklin⁶, Vijayalakshmi N⁷

¹Department of Anatomy, Northern Borders University, Arar, Saudi Arabia

²Department of Anatomy, Bhaarith Medical College, Chennai, Tamilnadu, India

³Department of Anatomy, Amritha University, Thiruporur, Tamil Nadu, India

⁴Department of Anatomy, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India

⁵Department of Anatomy, Qwest International University, IPOH Perak, Malaysia

⁶Department of Microbiology, CEO Anna Medical College, Mauritius, Montagne Blanche, Island

⁷Department of Chemical and Biotechnology, SASTRA (Deemed to be University), Thanjavur, Tamil Nadu, India

ABSTRACT

One Unani medicine, Roghan Surkh, which is prescribed for various conditions such as headache, body ache, insect bites, gout, arthritis, cough, cold, influenza, sprains, inflammations etc. was subjected to gas chromatography mass spectroscopic analysis. The medicine was bought from Unani medicine supplier and was processed suitably for the analysis. The profile showed many nmetbolites, namely, n-Hexadecanoic acid, Oleic Acid, 15-Hydroxypentadecanoic acid, Methyl 2-hydroxy-octadeca-9,12,15-trienoate, Methyl 3-cis,9-cis,12-cis-octadecatrienoate, Squalene, cis-13-Octadecenoic acid, 6,9-Octadecadienoic acid, methyl ester, beta-Sitosterol, Hexadecanoic acid, cyclohexyl ester etc. which show promising medicinal roles. These medicinal roles could lead to the cure of the ailments for which this medicine is prescribed.

Key words: Roghan Surkh, Unani, GCMS, Hexadecanoic acid, Oleic acid, 15-Hydroxypentadecanoic acid, Beta-Sitosterol

HOW TO CITE THIS ARTICLE: Hassan Mohammad M, Janaki CS, Rao MRK, Prabhu K, Deepa K, Franklin, Vijayalakshmi N, The Gas Chromatography Mass Spectroscopy Analysis of One Unani Drug, "Roghan Surkh", J Res Med Dent Sci, 2022, 10 (9): 137-140.

Corresponding author: Dr. Mudiganti Ram Krishna Rao

E-mail: editor.pubs@gmail.com

Received: 02-Jul-2022, Manuscript No. JRMDs-22-57368;

Editor assigned: 05-Jul-2022, Pre QC No. JRMDs-22-57368 (PQ);

Reviewed: 19-Jul-2022, QC No. JRMDs-22-57368;

Revised: 02-Sep-2022, Manuscript No. JRMDs-22-57368 (R);

Published: 08-Sep-2022

INTRODUCTION

Roghan Surkh is a Unani medicine in oil form, used externally to treat a number of conditions. A little oil is rubbed to relieve headache and body ache. Oil is applied on the affected part for insect bites, gout and arthritis. For cough, cold and influenza the warm oil is applied on the chest and throat. Warm oil is also applied in the ear for earache. For inflammations, injury and sprains the warm oil is applied on the affected part and covered with beetle leaf or banyan leaf and bandaged. This medicine contains a number of plants and plant parts as mentioned below:

Each 10 ml of Roghan Surkh contains: Ushna (*Usnea longissima*) Plant extract: 77.2 mg; Burada sandal Surkh (*Pterocarpus santalinus*) Stem extract: 77.2 mg; Habb-ul-Ghurab (*Strychnos nux-vomica*) Seed extract: 77.2 mg; Darhald (*Berberis aristata*) Stem extract: 77.2 mg, Kaifal (*Myrica esculenta*) Bark extract: 77.2 mg; Narkachoor (*Zingiber zerumbet*) Root extract: 77.2 mg; Haldi (*Curcuma longa*) Root extract: 154.4 mg; Berg Aakh Taaza (*Calotropis procera*): Leaf extract: 386 mg; Lahsu (*Allium sativum*) Bulb extract: 154.4 mg; Roghan sarson (*Brassica campestris*) Seed oil: 7.722 ml; Roghan Raai (*Brassica juncea*) Seed oil: 1.544 ml; Roghun Darchini (*Cinnamomum zeylanicum*) Stem bark oil: 0.019 ml; Roghan Laung (*Syzygium aromaticum*) Flower bud oil: 0.019 ml; Roghan Safsai (*Sesamum indicum*) Seed oil: 0.695 ml; Surkh Roghani Rang (colour): 3.86 gm. This medicine is prepared by standard Unani protocols. Although alternative and complimentary medicines such as Ayurveda, sidhha and Unani are in use form centuries their efficacy evaluation is still in its preliminary stage, The present workers have

worked to scientifically evaluate the veracity of these medicine systems by latest techniques so that deeper knowledge of the mechanism of action of these medicines could be gained [1-19]. The present study in one step further in this endeavour.

MATERIALS AND METHODS

Roghan Surkh was bought from Unani medicine supplier and the medicine was suitably processed by standard procedures for the analysis.

RESULTS

The profile of Roghan Surkh and the possible medicinal role of each metabolite are tabulated in Table 1.

Table 1: Indicates the retentions values, types of possible compound, their molecular formulae, molecular mass, peak area and their medicinal roles of each compound as shown in the GC MS profile of Roghan Surkh.

Ret. Time	Molecule	Mol. Formula	Mol. Mass	% Peak Area	Possible Medicinal Role
4.81	Benzene, 1,3-bis(1,1-dimethylethyl)-	C ₁₄ H ₂₂	190.2	0.14	Not known
5.25	Dodecane, 1-fluoro-	C ₁₂ H ₂₅ F	188.2	0.23	Not known
5.97	2,4-Nonadienal, (E,E)-	C ₉ H ₁₄ O	138.1	1.03	Not known
10.42	n-Hexadecanoic acid	C ₁₆ H ₃₂ O ₂	256.2	0.17	acidifier, arachidonic acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits production of uric acid, urine acidifier, anaphylactic, arylamine N acetyltransferase inhibitor, decreases norepinephrine production, Down regulates nuclear and cytosol androgen reuptake, GABAergic
12.25	Oleic Acid	C ₁₈ H ₃₄ O ₂	282.3	0.39	acidifier, arachidonic acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits production of uric acid, urine acidifier
13.78	Palmitoyl chloride	C ₁₆ H ₃₁ ClO	274.2	0.55	Not known
14.29	15-Hydroxypentadecanoic acid	C ₁₅ H ₃₀ O ₃	258.2	2.04	acidifier, arachidonic acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits production of uric acid, urine acidifier
17.07	Methyl 2-hydroxy-octadeca-9,12,15-trienoate	C ₁₉ H ₃₂ O ₃	308.2	9.02	17-beta-hydroxysteroid dehydrogenase-Inhibitor, Aryl hydrocarbon hydroxylase inhibitor, testosterone hydroxylase inducer, catechol-otmethyl Transferase inhibitor, methyl donar, methyl guanidine inhibitor
17.76	Methyl 3-cis,9-cis,12-cis-octadecatrienoate	C ₁₉ H ₃₂ O ₂	292.2	0.23	catechol-o-methyl transferase inhibitor, methyl donar, methyl guanidine inhibitor
20.14	Squalene	C ₃₀ H ₅₀	410.4	0.2	monooxygenase inhibitor, biochemical precursor in the preparation of steroids, natural moisturizer, used in cosmetics
20.42	cis-13-Octadecenoic acid	C ₁₈ H ₃₄ O ₂	282.3	0.18	acidifier, arachidonic-acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits production of uric acid, urine acidifier

20.69	6,9-Octadecadienoic acid, methyl ester	C ₁₉ H ₃₄ O ₂	294.3	0.28	acidifier, arachidonic-acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits production of uric acid, urine acidifier, catechol-o-methyl transferase inhibitor, methyl donar, methyl guanidine inhibitor
28.22	beta-Sitosterol	C ₂₉ H ₅₀ O	414.4	2.94	17 beta dehydrogenase inhibitor, androgen blocker, anti-amyloid beta, anticancer, Anti TGF beta, Beta 2-receptor, beta blocker, beta-galactosidase inhibitor, beta-glucuronidase inhibitor
30.43	Hexadecanoic acid, cyclohexyl ester	C ₂₂ H ₄₂ O ₂	338.3	62.27	acidifier, arachidonic-acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits production of uric acid, urine acidifier

Figure 1 depicts the gas chromatography mass spectrophotometric profile Roghan Surkh. The identification of metabolites was done by referring to NIST spectral library and the possible pharmaceutical roles of each bio molecule as per National Agriculture Library, USA and others as shown in Table 1 [20].

profile for which the medicinal roles are not known could be further probed.

ACKNOWLEDGEMENT

The authors thankfully acknowledge the support of all the people and organizations.

Qualitative Compound Report

Data File 030221061.D Sample Name Roghan Surkh
 Sample Type Position 111
 Acq Method GC Screening New Method.M Acquired Time 07-02-2021 AM 12:17:08
 Comment

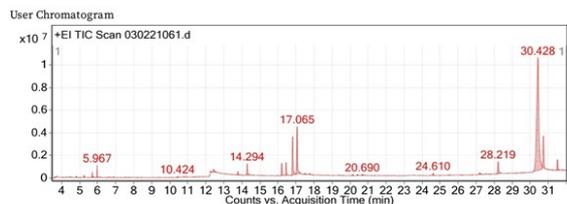


Figure 1: Shows the gas chromatography mass spectroscopic profile of roghan surkh.

DISCUSSION

The GC MS profile of Roghan Surkh depicted compounds, namely, n-Hexadecanoic acid, Oleic Acid, 15-Hydroxypentadecanoic acid, Methyl 2-hydroxy-octadeca-9,12,15-trienoate, Methyl 3-cis,9-cis,12-cis-octadecatrienoate, Squalene, cis-13-Octadecenoic acid, 6,9-Octadecadienoic acid, methyl ester, beta-Sitosterol, Hexadecanoic acid, cyclohexyl ester which have wide ranging medicinal roles. These molecules could contribute to the medicinal role of Roghan Surkh.

CONCLUSION

It could be summarized from the results and discussion that Roghan Surkh does contain important biomolecules which provides a clue to its prescription for the ailments it is given. Some of the molecules shown in the GC MS

REFERENCES

1. Rao MRK, Philip S, Kumar MH, et al. GC-MS analysis, antimicrobial, antioxidant activity of an Ayurvedic medicine, Salmali Niriyasa. J Chem Pharm Res 2015; 7:131-139.
2. Sivakumaran G, Prabhu K, Rao MRK, et al. Gas chromatography-mass spectrometry analysis of one ayurvedic oil, Anu thailam. DIT 2019; 11:2675-2678.
3. Sivakumaran G, Prabhu K, Rao MRK, et al. Gas chromatography-mass spectrometry analysis of one ayurvedic oil, Ksheerabala Thailam. DIT 2019; 11: 2661-2665.
4. Sivakumaran G, Prabhu K, Rao MRK, et al. Gas chromatography-mass spectrometry analysis of one Ayurvedic oil, Triphaladi Thailam. DIT 2019; 11:2679-2683.
5. Narayanan G, Prabhu K, Rao MRK, et al. Gas chromatography-mass spectrometry analysis of one Ayurvedic medicine, Drakshadi Kashayam. DIT 2019; 11: 2652-2656.
6. Narayanan G, Prabhu K, Rao MRK, et al. Gas chromatography-mass spectrometry analysis of one ayurvedic medicine, Kutajarishtam. DIT 2019; 11:2666-2669.
7. Narayanan G, Prabhu K, Rao MRK, et al. Gas chromatography-mass spectrometry analysis of one Ayurvedic antiobesity medicine, Lohasava. DIT 2019; 11:2670-2674.
8. Kumar MH, Prabhu K, Rao MRK, et al. Gas chromatography/mass spectrometry analysis of one Ayurvedic skin oil, Eladi Kera Thailam. DIT 2019; 11:2657-2660.

9. Mohammad H, Prabhu K, Rao MRK, et al. The GC MS study of one Ayurvedic Pain relieving OIL "Mahamasha thailam". Drug Discov Today 2019; 12:1524-1527.
10. Mohammad H, KPrabhu K, Rao MRK, et al. The GC MS study of one Ayurvedic Pain relieving oil "Karpooradi thailam", Drug Invention Today, 2019; 12:1542-1546.
11. Prabhu j, Prabhu K, Chaudhury A, et al. Neuro protective role of Saraswatharishtam on Scopolamine induced memory impairment in animal model. Pharmacogn J 2020; 12:465-472.
12. Prabhu K, Rao MRK, AK Bharath, et al. The GC MS study of one Ayurvedic Rasayana formulation Narasimha Rasayanam. DIT 2020; 13:658-662.
13. Prabhu K, Rao MRK, Vishal S K, et al. GC MS study of one Ayurvedic Rasayana drug, Dhanwantari Rasayanam. DIT 2020; 14:783-786.
14. Sharmila D, A Poovarasana, E Pradeep, et al. GC MS analysis of one Ayurvedic formulation, Sitopaladi. RJPT 2021; 14:911-915.
15. Narayanan G, K Prabhu, Chaudhuri A, et al. Cardio protective role of Partharishtam on isoproterenol induced myocardial infarction in animal model. Pharmacogn J 2021; 13:591-595.
16. Kalivannan J, Janaki CS, Rao MRK, et al. The GC MS study of one ayurvedic formulation, Chandanasavam. Ind J of Nat Sci 2021; 12:33671-33676.
17. Akshaya SR, Kalaivani S, Prabhu K, et al. The GC MS study of one Ayurvedic churnam, Avalgubijadi churnam. Ind J of Nat Sci 2021; 12:34395-34402.
18. Subbiah AJ, Kavimani M, Rao MRK, et al. The GC MS study of one Ayurvedic. Formulation, Pushyanuga churnam. Ind J Nat Sci 2021; 12:35757-357-366.
19. Yuvaraj R, Vijayakumar S, Rao M R K et al. The GC MS study of one Ayurvedic medicine Pippalyasavam'. Ind J of Nat Sci 2021; 12:35612-35618.
20. Duke, James A. Dr. Duke's Phytochemical and Ethnobotanical Databases. U.S. Department of Agriculture, Agricultural Research Service. Ag Data Commons, U.S, 2021.