

The Gas Chromatography Analysis of One Unani Drug, “Khushtha Hajrul Yahood”

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ABSTRACT

This work deals with gas chromatography mass spectrometric analysis of one Unani medicine, Khushtha Hajrul Yahood, which is prescribed for urinary tract related ailments like urolithiasis, urinary tract infections, gonorrhoea etc. The medicine was bought from a Unani medicine shop and was processed suitably for gas chromatography mass spectroscopic analysis. The results indicated the presence of many molecules such as Decane, 1-iodo-, Acetic acid, chloro-, decyl ester, 2-Isopropyl-5-methyl-1-heptanol, Sulfurous acid, butyl undecyl ester, Cyclohexane, 1-ethyl-1,3-dimethyl-, trans-, alpha-Santalol, Dodecanedioic acid, Methyl 2-hydroxy-octadeca-9,12,15-trienoate, Phthalic acid, hexadecyl hex-3-yl ester etc. which have far reaching medicinal roles, which could contribute to the medicinal role of Khushtha Hajrul Yahood in treating urinary tract related ailments.

Key words: GC MS, Khushtha hazrul yahood, Urolithiasis, Gonorrhoea, Alpha-santalol, Sulfurous acid, Butyl undecyl ester

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INTRODUCTION

Khushtha Hajrul Yahood is a Unani medicine that is primarily used for the treatment of kidney diseases. It is also prescribed for urinary tract infections, gonorrhoea, gall stones etc. The ingredients are:

- Hajrul-Yahood (*Lapis judaicus*)
- Shora Qalmi (Potassium nitrate)
- Aabe Mooli (*Raphanus sativus*)

Hajrul yahud (*Lapis judaicus*) is also known as Jew's stone, which is a fossilised sea urchin spines. This medicine is used as a topical drug for pain, to improve

urinary output and for prevent and treat kidney stones. Makbul et al. have reviewed the role of Hajrul yahud as a medicine for the management of urolithiasis [1].

Potassium nitrate is a used as medicine for small wounds and warts. *Raphanus sativus* is common edible plant which has many medicinal roles [2]. Torres et al. have elaborated the role of *Raphanus sativus* with reference to gall stones and control of cholesterol [3]. There are scanty reports on the role of Khushtha Hajrul Yahood. It is imperative to establish the authenticity of alternative medicines such as Ayurveda, Sidhha and Unani systems as they are time tested and in use for centuries. 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 [4-22]. The present study in one step further in this endeavour.

MATERIALS AND METHODS

Khushta Hajrul Yahood was bought from a Unani medicine vendor in Chennai. The medicine was suitably processed by standard procedures and the GC-MS analysis was performed.

RESULTS

Khushta Hajrul Yahood GC MS profile and possible medicinal role of each molecule is 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 Khushta Hajrul Yahood.

Ret. Time	Molecule	Mol. Formula	Mol. Mass	% Peak Area	Possible Medicinal Role
3.69	Decane, 1-iodo-	C ₁₀ H ₂₁ I	268.1	1.25	Idothyronine-deiodinase inhibitor
4.48	Acetic acid, chloro-, decyl ester	C ₁₂ H ₂₃ ClO ₂	234.1	7.17	increases aromatic amino acid decarboxylase activity, Inhibits uric acid production
4.55	Cyclopentane, 1-butyl-2-propyl-	C ₁₂ H ₂₄	168.2	5.13	Not known
5.25	Dodecane, 1-fluoro-	C ₁₂ H ₂₅ F	188.2	18.30	Not known
5.55	2-Isopropyl-5-methyl-1-heptanol	C ₁₁ H ₂₄ O	172.2	1.43	Catechol-O-Methyl Transferase-Inhibitor,
5.69	Sulfurous acid, butyl undecyl ester	C ₁₅ H ₃₂ O ₃ S	292.2	1.22	Arachidonic acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits uric acid acid production
7.92	Cyclohexane, 1-ethyl-1,3-dimethyl-, trans-	C ₁₀ H ₂₀	140.2	1.73	Glutathione-S-Transferase inhibitor, increases glutathione -S-transferase (GST) activity, decreases oxaloacetate transaminase activity, Catechol-O-Methyl-Transferase-Inhibitor, Decrease Glutamate Oxaloacetate Transaminase, Decrease Glutamate PuruvateTransaminase, Glucosyl-Transferase inhibitor, increases glyoxalate transamination, reverse transcriptase inhibitor
8.88	.alpha-Santalol	C ₁₅ H ₂₄ O	220.2	1.19	5 alpha reductase inhibitor, HIF 1 alpha inhibitor, Ikappa B alpha phosphorylation inhibitor, increases alpha mannosidae activity, Interleukine 1 alpha inhibitor, TNF alpha inhibitor
13.79	cis-9-Hexadecenal	C ₁₆ H ₃₀ O	238.2	1.21	Not known
14.30	Dodecanedioic acid	C ₁₂ H ₂₂ O ₄	230.2	2.67	Arachidonic acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits uric acid production
16.82	9-Octadecenoic acid, (E)-	C ₁₈ H ₃₄ O ₂	282.3	15.86	Not known
17.07	Methyl 2-hydroxy-octadeca-9,12,15-trienoate	C ₁₉ H ₃₂ O ₃	308.2	10.88	17 beta hydroxysteroid dehydrogenase inhibitor, Aryl hydrocarbon hydroxylase inhibitor, testosterone hydroxylase inducer, Catechol-O-Methyl Transferase-Inhibitor

18.22	Phthalic acid, hexadecyl hex-3-yl ester	C ₃₀ H ₅₀ O ₄	474.4	1.33	Asarachidonic acid inhibitor, increase aromatic amino acid decarboxylase activity, inhibits uric acid production Hexokinase stimulator
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Figure 1 shows the graph profile of the Unani medicine Khushta Hajrul Yahood. The molecules were identified along with the possible pharmaceutical roles of each bio molecule was referred from National Agriculture Library, USA and others as shown in Table 1 [23].

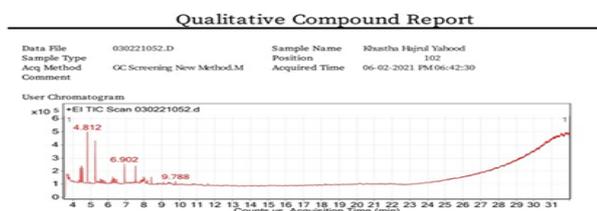


Figure 1: indicates the GC MS profile of Khushta Hajrul Yahood.

DISCUSSION

Khushta Hajrul Yahood showed some compounds like, Decane, 1-iodo-, Acetic acid, chloro-, decyl ester, 2-Isopropyl-5-methyl-1-heptanol, Sulfurous acid, butyl undecyl ester, Cyclohexane, 1-ethyl-1,3-dimethyl-, trans-, alpha-Santalol, Dodecanedioic acid, Methyl 2-hydroxy-octadeca-9,12,15-trienoate, Phthalic acid, hexadecyl hex-3-yl ester which have important medicinal roles as shown in Table 1. These medicinal roles could contribute to the urolithiatic effect of Khushta Hajrul Yahood.

CONCLUSION

It could be summarized from the results and discussion that Khushta Hajrul Yahood does contain important biomolecules which provides a clue to its prescription for the urolithiatic role of this medicine. It will be of interest to probe into the medicinal roles of many compound present in Khushta Hajrul Yahood for which the medicinal roles are not reported yet.

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