The Gas Chromatography Mass Spectroscopy Analysis of One Unani Drug, "Zimad Aouja"

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ABSTRACT

The Unani drug, "Zimad Aouja", is prescribed for joint sprains. The medicine was bought from Unani medicine supplier and was processed suitably for gas chromatography mass spectroscopic analysis. The profile showed metabolites, namely, 1-Hexadecyn-3-ol, 3,7,11,15-tetramethyl-, p-Menthane, 2,3-dibromo-8-phenyl-, Trichloroacetic acid, dodec-9-ynyl ester, Ar-tumerone, Curlone, Benzenebutanal, gamma,4-dimethyl-, Methyl 4,7,10,13-hexadecatetraenoate, Tetradecanedioic acid, 6-Octadecenoic acid etc. which show promising medicinal roles. These medicinal roles could lead to the function of the medicine to cure the ailments for which this medicine is prescribed.

Key words: GCMS, Zimad aouja, Unani, Ar-tumerone, Curlone, Benzenebutanal, Tetradecanedioic acid, 6-Octadecenoic acid

INTRODUCTION

Zimad aouja is powder form of Unani medicine which contains mostly turmeric (*Curcuma longa*). When mixed with water it becomes and paste which is used to treat joint sprains. It can also be mixed with vinegar or hot water and spread on a cloth which is then applied to affected areas. 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 [1-19]. Not much work in this direction is reported as far as Zimad Aouja is concerned.

MATERIALS AND METHODS

The drug, Zimad Aouja was bought from Unani medicine supplier and was suitably processed by standard procedures for the analysis.

RESULTS

The Unani medicine Zimad Aouja gas chromatography mass spectroscopic profile and possible medicinal role of molecules 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 Zimad Aouja.

Ret. Time	Molecule	Mol. Formula	Mol. Mass	% Peak Area	Possible Medicinal Role
4.55	Cyclopentane, 1-pentyl-2-propyl-	$C_{13}H_{26}$	182.2	1.46	Not known
4.61	Ribitol	$C_5H_{12}O_5$	152.1	1.04	Not known
4.82	Benzene, 1,3-bis(1,1-dimethylethyl)-	$C_{14}H_{22}$	190.2	4.29	Not known
5.25	Dodecane, 1-fluoro-	$C_{12}H_{25}F$	188.2	4.59	Not known
6.51	2-Methoxy-4-vinylphenol	$C_9H_{10}O_2$	150.1	1.15	Not known
7.53	Phenol, 2,4-bis(1,1-dimethylethyl)-	$C_{14}H_{22}O$	206.2	1.56	Not known
7.99	1-Hexadecyn-3-ol, 3,7,11,15-tetramethyl-	$C_{20}H_{38}O$	294.3	0.63	Oligosaccharide provider
8.26	p-Menthane, 2,3-dibromo-8-phenyl-	$C_{16}H_{22}Br_2$	372	0.9	Adrenalin pressor, Anti-cAMP-Phosphodiesterase, anticancer, antidote, antimitral valve prolapse
8.88	Trichloroacetic acid, dodec-9-ynyl ester	$C_{14}H_{21}Cl_3O_2$	326.1	0.68	Arachidonic acid-inhibitor, increases aromatic amino Acid decarboxylase activity, inhibits production of uric Acid,
9.23	Ar-tumerone	$C_{15}H_{20}O$	216.2	22.67	Arachidonic acid Inhibitor, arginine rich, aromatase inhibitor, Arterioconstrictor, aryl hydrocarbon hydroxylase inhibitor, arylamine-N-acetyltransferase inhibitor, increases aromatic amino acid decarboxylase activity, adrenaline pressor, alogenic, anti-cAMP phosphodiesterase, anticancer
9.35	Curlone	$C_{15}H_{22}O$	218.2	5.2	Oligosaccharide provider
9.5	Benzenebutanal, gamma,4-dimethyl-	$C_{12}H_{16}O$	176.1	0.59	PPAR-Gamma antagonistic
10.41	Methyl 4,7,10,13-hexadecatetraenoate	$C_{17}H_{26}O_2$	262.2	0.77	Catechol-o-methyl-transferase-inhibitor, methyl-donor, methyl-guanidine-inhibitor
11.3	3-Buten-2-one, 4-(4-hydroxy-3-methoxyphenyl)-	$C_{11}H_{12}O_3$	192.1	1.28	Not known
11.61	Methyl 16-hydroxy-hexadecanoate	$C_{17}H_{34}O_3$	286.3	0.97	17 beta hydroxysteroid dehydrogenase inhibitor, Aryl hydrocarbon hydroxylase inhibitor, testosterone hydroxylase inducer
13.78	Palmitoyl chloride	$C_{16}H_{31}ClO$	274.2	0.95	Not known
14.3	Tetradecanedioic acid	$C_{14}H_{26}O_4$	258.2	3.87	Increases aromatic amino acid decarboxylase activity, inhibit production of uric acid,
14.9	Decanamide, N-(2-hydroxyethyl)-	$C_{12}H_{25}NO_2$	215.2	0.9	Not known
16.22	6-Octadecenoic acid	$C_{18}H_{34}O_2$	282.3	5.47	Increases aromatic amino acid decarboxylase activity, inhibit production of uric acid
16.82	9-Octadecenoic acid, (E)-	$C_{18}H_{34}O_2$	282.3	16.84	Not known
17.07	Butyl 9,12,15-octadecatrienoate	$C_{22}H_{38}O_2$	334.3	15.63	Not Known

Figure 1 shows the gas chromatography mass spectroscopic of the Unani medicine Zimad Aouja. The identification of metabolites was accomplished by comparison of retention time and fragmentation pattern with mass spectra in the NIST spectral library stored in the computer software (version 1.10 beta, Shimadzu) of the GC-MS along with the possible pharmaceutical roles of each bio molecule as per Dr. Duke's phytochemical and ethnobotanical data base (National Agriculture Library, USA) and others as shown in Table 1 [20].
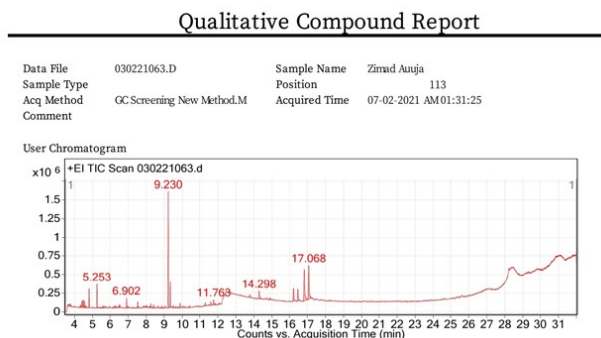

Figure 1: Indicates the Gas chromatography mass spectroscopic profile of Zimad Aouja.

DISCUSSION

The gas chromatography mass spectroscopic profile of Zimad Aouja showed compounds, namely, 1-Hexadecyn-3-ol, 3,7,11,15-tetramethyl-, p-Menthane, 2,3-dibromo-8-phenyl-, Trichloroacetic acid, dodec-9-ynyl ester, Ar-tumerone, Curlone, Benzenebutanal, gamma,4-dimethyl-, Methyl 4,7,10,13-hexadecatetraenoate, Tetradecanedioic acid, 6-Octadecenoic acid etc. which have important medicinal roles as shown in Table 1. These medicinal roles must be attributed to the medicinal role of Zimad aouja which is prescribed pain relief due to sprains etc.

CONCLUSION

It could be summarized from the results and discussion that Zimad Aouja does contain important biomolecules which provides a clue to its prescription for the ailments it is given. Some of the molecules shown in the GCMS profile for which the medicinal roles are not known could be further probed.

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