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The Gas Chromatography Mass Spectroscopy Analysis of One Unani Drug, "Muffarah Ahmedi"

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ABSTRACT

The Unani medicine, Muffarah Ahmedi, which is prescribed for duodenal and peptic ulcers, was subjected to gas chromatography mass spectroscopic analysis. The medicine was bought procured from Unani medicine supplier and was processed suitably for analysis. The profile results indicated the availability of many compounds, namely, trans-2-methyl-4-n-pentylthiane, S, S dioxide, Phenylethyl Alcohol, trans-3-Methyl-2-n-propylthiophane, 5-Hydroxymethylfurfural, Tetradecanedioic acid, 6-Octadecenoic acid, trans-13-Octadecenoic acid, Methyl 2-hydroxy-octadeca-9,12,15-trienoate, which correspond well with the medicinal role of this medicine.

Key words: GCMS, Unani, Muffarah Ahmedi, Phenylethyl alcohol, Trans-3-Methyl-2-n-propylthiophane, 5-Hydroxymethylfurfural

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INTRODUCTION

Muffarah Ahmedi is a Unani medicine used to treat duodenal and gastric ulcers and supposed to work as coolant. Its ingredients constitute of Thabasheer (Bamboo extracts), Sandal-e-sufeed (White sandal wood), Amila (*Phyllanthus embelica*), Gul e-surkh (Rose flower), Kishneez (*Coriandrum sativum* L.) and Khande sufeed (White sugar). 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].The present study in one step further in this endeavour. Not much work in this direction is reported on the medicinal role of this medicine.

MATERIALS AND METHODS

Muffarah Ahmedi was bought from a Unani medicine vendor at chennai. The medicine was suitably processed by standard procedures and the GC-MS analysis was performed.

RESULTS

Muffarah Ahmedi gas chromatography mass spectroscopy profile and possible medicinal role of each molecule indicated in the GC MS profile 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 Muffarah Ahmedi.

Ret. Time	Molecule	Mol. Formula	Mol. Mass	% peak Area	Possible Medicinal Roles
4.41	trans-2-methyl-4-n-pentylthiane, S,S-dioxide	$C_{11}H_{22}O_2S$	218.1	1.8	Nitric oxide synthase inhibitor, Glutathione-S-Transferase-Inhibitor, Myo-neuro stimulant, Nitric Oxide scavenger, stimulates norepinephrine production, Stimulates Sympathetic nervous system, Catechol-O- Methyl transferase inhibitor, known as smart drug, Adrenocortical stimulant, Decreases Glutamate Oxaloacetate Transaminase, Decreases Glutamate Pyruvate Transaminase, Glucosyl-Transferase-Inhibitor, Glutathione-S-Transferase-Inhibitor, Increases Glyoxalate Transamination, Reverse-Transcriptase-Inhibitor, Transdermal
4.64	Phenylethyl Alcohol	$C_8H_{10}O$	122.1	6.17	Alcohol dehydrogenase inhibitor, Alcohol detoxicant
4.94	trans-3-Methyl-2-n-propylthiophane	$C_8H_{16}S$	144.1	0.95	Catechol-O-Methyl-Transferase-Inhibitor, increases Glutathione-S-Transferase (GST) activity, decreases glutamate oxaloacetate transaminase, decreases glutamate pyruvate transaminase, glucosyl-transferase-inhibitor, glutathione-S-transferase-inhibitor, increases glyoxalate transamination, reverse-transcriptase-Inhibitor, GABAergic, increased NK cell activity, inhibits production of tumour necrosis factor, Myo-Neuro-stimulator
5.26	Dodecane, 1-fluoro-	$C_{12}H_{25}F$	188.2	5.48	Not known
6.31	5-Hydroxymethylfurfural	$C_6H_6O_3$	126	12.72	It is reported to stop neuron apoptosis
6.39	Triallylmethylsilane	$C_{10}H_{18}Si$	166.1	0.76	Not known
8.03	Methylparaben	$C_8H_8O_3$	152	20.26	Not known
9.28	Isobutyl 4-hydroxybenzoate	$C_{11}H_{14}O_3$	194.1	11.6	Not known
13.78	Palmitoyl chloride	$C_{16}H_{31}ClO$	274.2	0.68	Not known
14.3	Tetradecanedioic acid	$C_{14}H_{26}O_4$	258.2	1.77	acidifier, acidulant, arachidonic acid-inhibitor, increases aromatic amino acid decarboxylase activity, inhibits Production of Uric Acid
16.22	6-Octadecenoic acid	$C_{18}H_{34}O_2$	282.3	5.26	acidifier, acidulant, arachidonic acid-inhibitor, increases aromatic amino acid decarboxylase activity, inhibits production of uric Acid
16.82	trans-13-Octadecenoic acid	$C_{18}H_{34}O_2$	282.3	10.52	Catechol-O-methyl-transferase-Inhibitor, increases Glutathione-S-

					Transferase (GST) activity, decreases glutamate oxaloacetate transaminase, decreases glutamate pyruvate transaminase, tlucosyl-transferase-Inhibitor, glutathione-S-transferase-Inhibitor, increases glyoxalate transamination, Reverse-transcriptase-inhibitor, transdermal, 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	10.63	17 beta hydroxyl steroid dehydrogenase inhibitor, aryl hydrocarbon hydroxylase inhibitor, testosterone hydroxylase inducer, Catechol-O-methyl-transferase-inhibitor, methyl donar, methyl guanidine inhibitor

Figure 1 shows gas chromatography mass spectroscopy profile of Muffarah Ahmedi. The identification of metabolites was compared with NIST spectral library and the possible pharmaceutical roles of each bio molecule was referred with National Agriculture Library, USA and others as shown in Table 1 [20].

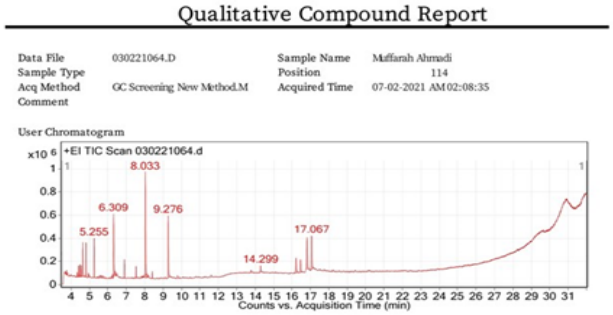

Figure 1: Indicates the gas chromatography mass spectroscopic profile of Muffarah Ahmedi.

DISCUSSION

Muffarah Ahmedi contained some compounds, namely, trans-2-methyl-4-n-pentylthiane, S,S-dioxide, phenylethyl alcohol, trans-3-Methyl-2-n-propylthiophane, 5-hydroxymethylfurfural, tetradecanedioic acid, 6-octadecenoic acid, trans-13-octadecenoic acid, methyl 2-hydroxy-octadeca-9,12,15-trienoate etc. which were reported to have far reaching medicinal roles that could support the role of Muffarah Ahmedi as a good medicine for duodenal and peptic ulcers.

CONCLUSION

It could be summarized from the results and discussion that Muffarah Ahmedi does contain important biomolecules which provides a clue to its prescription for the ailments it is given. It will be of interest to probe into the medicinal roles of many compound present in Muffarah Ahmedi for which reports are not available.

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