



# GC-MS Analysis of Marketed Unani Formulation Arq Gulab

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## Abstract

Arq Gulab is a marketed herbal formulation used in different Indian traditional systems of medicine as antispasmodic, antiseptic, laxative, aphrodisiac, cooling, sedative, antidepressant, antiulcer and soothing in irritation, redness & inflammation of eyes. The aim of the present study was to identify the steam volatile active chemical constituents in Arq Gulab by GC-MS analysis. The undiluted sample was analyzed using GC-MS-QP2010 Plus apparatus equipped with Quadra pole detector and split injection system. MS spectra of separated compounds were compared with one from Wiley 7 Nist 05 mass spectral database. The Volatile compounds as detected by GC-MS from Arq Gulab were camphor, benzoic acid, menthol, cinnamaldehyde and thymol. The five compounds detected in formulation constitute about 99.94%. The active constituents such as camphor, menthol, cinnamaldehyde and thymol have been reported by several workers to possess biological actions such as analgesic, antimicrobial activity, antioxidant, anxiolysis, cessation of convulsions and sedation. The present study concludes that the marketed formulation Arq Gulab contains phyto-compounds, which have been reported to possess pharmacological actions mentioned above. Hence, this study further encourages the use of Arq Gulab in unani health care practice.

**KEY WORDS:** GC-MS, Arq Gulab, Cinnamaldehyde and Thymol.

## I. INTRODUCTION

Arqs are liquid preparations obtained by the distillation of macerated crude drugs in aqueous medium. Different types of arqs like arq gulab, arq kasni, ark mundi etc., have been used by the traditional practitioners for the management as well as treatment of disorders related to the various organs. Number of drugs both single and compound preparations are used widely in Tibbe-e-Unani in the management of various diseases. But such drugs mostly, have not been investigated for their described effects. Arq gulab is one such formulation, is a clear, non- viscous liquid preparation obtained by the aqueous distillation of duly macerated flowers of the plant *Rosa damascene mill* belonging to the family Rosaceae. In Unani system of medicine, arq gulab was described to be refrigerant, reduces thirst, gives relief in conjunctivitis, anxiety, syncope, palpitation and provides strength and cheerfulness to the heart. It is mainly prescribed when there is weakness of the principal organs of the body like brain, heart and liver.

Phytochemical literature reveals presence of glycosides, reducing sugars, tannins and volatile oils in this plant extracts. However phytochemicals present in volatile aqueous distillates have not been reported. Hence, in the present study GC-MS technique is being utilized for detecting the steam volatile phytochemicals present in the aqueous distillates of arq gulab.<sup>1, 2, 3, 4</sup>

## II. MATERIAL AND METHODS

Arq Gulab was obtained from local unani stores. The composition of the formulation as given on its label is as follows: Rose petals (1 part) and water (8 parts). All the other chemicals used in the study were procured from qualigens fine chemicals.

**Chemical analysis by GC/MS:** The undiluted arq gulab sample was used for analysis. The instrumentation, analytical procedure and operating conditions followed were same as reported by Ashok Kumar<sup>5</sup>.

## III. RESULTS AND DISCUSSION

The results are reported (Figure.1). The formulation was analyzed for detection of chemical components by GC-MS technique. It was revealed that, the phytoconstituents identified belonged to different chemical classes. Five compounds constituting about 99.94% of the volatile constituents of the formulations were identified and presented (Table.1). The main components were camphor, menthol, thymol, & benzoic acid. Most of the phytoconstituents detected have been reported by several workers to possess biological actions, which have been tabulated (Table.2).

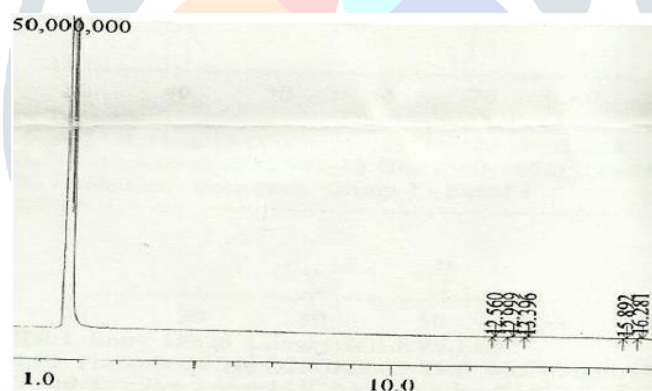


Figure.1. GC-MS analysis of Arq Gulab chemical components

Table 1- Phytoconstituents detected and identified by GC-MS

Peak	R. Time	Area	Area%	Name	Similarity
1	12.560	77552	4.5819	Camphor	100
2	12.999	322070	19.0285	Benzoic acid	97
3	13.396	64223	3.7944	L-Menthol	98
4	15.892	144607	8.5437	Cinnamaldehyde	34
5	16.281	1084111	64.0514	Thymol	99
		1692563	100		

Table.2. Phytoconstituents and their reported biological actions

Compound	Biological actions scientifically proved
Camphor <sup>6,7,8,9,10</sup>	Analgesic, antitussive, nasal decongestant, expectorant, antipruritic, counter irritant activity, Antimicrobial activity, Anti-senescence Activity, Aphrodisiac, antiaphrodisiac, abortifaciant
Menthol <sup>11,12</sup>	Analgesic, spasmolytic activity
Thymol <sup>13</sup>	Anticholinesterase, antioxidant, and anti-inflammatory activities
Cinnamaldehyde <sup>14</sup>	Antidiabetic activity, antimicrobial, hypolipidemic effect, antiobesity effect, neuroprotection

#### IV. CONCLUSION

GC/MS results indicate the presence of five phytochemical compounds of which four have been reported to possess therapeutic benefits which are medicinally same as claimed by traditional practioners. This analytical technique may also be used as one of the method of evaluating the quality of this herbal formulation.

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