



DETERMINATION OF CHEMICAL COMPOSITION OF ESSENTIAL OIL PORTION OF REPUTED MARKETED UNANI FORMULATION ZINDA TILISMATH

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ABSTRACT

Zinda Tilismath is an ancient unani formula prepared from selected herbs extremely effective in treating several common ailments like cough, blocked nose, Indigestion, Stomach disorder, etc. claimed by the manufacturer. Nowadays, it has become a necessity that for wider promotion, expectancy, sales and export of the medicinal product scientifically proved data helps in larger voluminous sales. Hence in the present preliminary phytochemical investigations an attempt has been to check the chemical composition of the essential oil portion of Zinda Tilismath. 3 µl of the sample solution was directly injected into the Shimadzu GC-MS-QP2010 Plus apparatus equipped with quadrupole detector and split injection system. MS spectra of separated compounds were compared with one from Wiley 7 Nist 05 mass spectral database. The identity of the spectra above 95% was needed for the identification of compounds. The chemical composition of essential oil portion of the formulation was determined by GC-MS analysis. Eight compounds constituting about 90.58% of the essential oil were identified. The main components were L-limonene, Tetradecane, Decane, Isoborneol, Camphor, Terpane, Cymol & Alpha-Pinene. The outcome of this study is essential oil portion of the Zinda Tilismath contain terpenes and their oxygenated derivatives, which are believed to be highly effective antibacterial, antifungal, analgesic, anti-inflammatory, antioxidant & spasmolytic. The above eight major compounds of the formulation can be regularly be checked for their detection & quantification in routine quality control of these herbal formulation.

Keywords: Zinda Tilismath, Unani Formulation, Essential Oil, GC-MS analysis.

INTRODUCTION

Natural remedies have been used for centuries. Some 5 billion people worldwide still rely solely on traditional plant-based formulations to heal what ails them. Unfortunately, the FDA does not supervise the manufacture or importation of herbal remedies/formulations. The formulations you take may not contain what's listed on the label, and there is a risk of contamination. Until recently, claims about the effectiveness of over the counter herbal formulations had not been tested. The good news is that large and well-designed trials of many natural therapies/formulations are being conducted to determine their chemical composition/effectiveness/safety¹.

Zinda Tilismath is an ancient unani formula prepared from select herbs with the promise of 'Health from nature'. Zinda Tilismath is extremely effective in treating several common ailments like cough, blocked nose, Indigestion, Stomach disorder & more as claimed by manufacturer. It can be used both internally and externally. The basic compound of course is Eucalyptus oil and the other ingredients include cinnamon, cloves, mint, loneple, black pepper, cardamom, alum, ferric oxide and omum seeds.

The present study aims to investigate the chemical composition of volatile oil portion of the unani marketed herbal formulation Zinda Tilismath by GC-MS analysis.

MATERIALS AND METHODS

Formulation

Zinda Tilismath was procured from local unani stores. The composition of the formulation as appeared on its label is as follows: basic ingredient is Eucalyptus oil and the other ingredients include

cinnamon, cloves, mint, loneple, black pepper, cardamom, alum, ferric oxide and omum seeds. All the chemicals used were of highest purity, available commercially and were procured from himedia and qualigens fine chemicals.

Chemical analysis by GC/MS

The sample was analyzed using Shimadzu GC-MS-QP2010 Plus apparatus equipped with quadrupole detector and split injection system. The GC was fitted with a ZP-624 capillary column (30mm x 1.4 mm, film thickness 0.25µm). The temperature programmed was as follows: injector temperature 220°C, initial oven temperature at 50°C for 2 minutes, then rise to 250°C at the rate of 10°C per minute for 25 minutes, transfer line temperature 220°C. Helium was used as carrier gas at 35.6 Kpa pressure with flow 2.5 ml/min and electronic pressure control on. The EM voltage was 952.9 V with lower and upper mass limits set at 30 & 350 m/z. Samples were solved in n-hexane and injected automatically. MS spectra of separated compounds were compared with one from Wiley 7 Nist 05 mass spectral database. The identity of the spectra above 95% was needed for the identification of compounds.

RESULTS AND DISCUSSION

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. Eight compounds constituting about 90.58% of the essential oil were identified. The main components were L-limonene, Tetradecane, Decane, Isoborneol, camphor, Terpane, Cymol & Alpha-pinene. The results of GC-MS analysis is shown in Table 1. Most of the Phytoconstituents detected have been reported by several workers to possess biological actions, which are shown in Table 2.

Table 1: Volatile compounds detected by GC-MS from Unani herbal marketed formulation Zinda Tilismath

Peak	Retention Time(RT)	Compounds	% Matching with Wiley Library
1	6.262	Alpha-pinene	99
2	7.531	Beta-pinene	99
3	7.857	Beta- myrcene	99
4	8.178	Decane	99
5	8.368	Alpha-phellandrene	99

6	8.438	Cis-ocimene	99
7	8.684	Alpha-terpinene	99
8	8.925	Cymol	99
9	9.255	L-Limonene	99
10	9.907	Terpan	99
11	10.692	Gamma-terpinene	99
12	11.118	Alpha-terpinene	99
13	12.542	Tetradecane	99
14	12.953	Camphor	99
15	13.356	Isoborneol	99
16	13.811	L-Menthol	99
17	13.887	Linalyl propionate	99
18	14.223	Dodecane	99
19	16.252	Decane	99
20	16.464	Thymol	99
21	17.624	Hexadecane	99
22	18.859	Ocimenyl acetate	99
23	19.826	Hexadecane	99
24	21.103	Aromadendrene	98

Table 2: Phytoconstituents and their reported biological actions

Sl. No.	Compounds	Biological Actions	Uses claimed by Manufacturers
1	L-limonene	Immunomodulatory Activity ¹ , spasmolytic activity ² , Antinociceptive ³	Headache, Toothache, Earache, Cough, cold and catarrh
2	Tetradecane	-----	-----
3	Decane	-----	Insect Bites, Burns and Scalds
4	Isoborneol	Antiviral activity ⁴ , Antioxidant activity ⁵ , analgesia and anaesthesia ⁶	Itching and Scabies
5	alpha-pinene	Antimicrobial activity ⁷	Nose bleeding
6	Cymol (P-cymene)	Anthelmintic ⁸ , Antimicrobial activity ⁹	Pneumonia and Lumbago
7	Terpane	-----	-----
8	camphor	Analgesic ¹⁰ , Antimicrobial activity ¹¹	Stomach Troubles: Indigestion, Flatulence, Loud Eructation Loose Motion, Vomiting, Nausea, Dysentery Cholera, Plague and other Epidemics
9	Menthol	Analgesic ¹² , Antifungal Activity ¹³ , antimicrobial activity ¹⁴	-----
10	Thymol	Anti-inflammatory activity ¹⁵ , Antioxidant ¹⁶	-----

CONCLUSION

The outcome of this study is essential oil portion of the Zinda Tilismath contain terpenes and their oxygenated derivatives, which are believed to be highly effective antibacterial, antifungal, analgesic, anti-inflammatory, immunomodulatory, antioxidant & spasmolytic. The above eight major compounds of the formulation can be regularly be checked for their detection in routine quality control of this herbal formulation by GC-MS technique.

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