Research Article

GC-MS Analysis of Triphaladi Rasayana, an Ayurvedic Rejuvenant.

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ABSTRACT

Rasayanas in Ayurveda are used general health, rejuvenation and as anti-aging formulations. They are tonics and can be used by all. The present study deals with the GC MS analysis of one such Rasayana, Triphla Rasayana. This rasayana has the ability to balance all the three doshas, viz. Vata, Pitta and Kapha, thus having wide range of medicinal properties. The GC MS analysis results indicated the presence of some important compounds namely, á-Sitosterol, Oleic Acid, 2-[4-methyl-6-(2,6,6-trimethylcyclohex-1-enyl)hexa-1,3,5-,1-Monolinoleoylglycerol trimethylsilyl ether and 1H-2,8a-Methanocyclopenta[a]cyclopropa[e]cyclodecen-11-one, which have various medicinal properties which augur well with the similar properties of Triphala rasayana.

Keywords: Ayurveda, Triphala rasayana, Oleic acid, á-Sitosterol, GC MS, Vata, Pitha, Kapha.

INTRODUCTION

Rasayana is the seventh division of the eight divisions of Ayurveda. The Rasayana drugs and formulations provides longevity, memory, intelligence, freedom from disorders, youthful age, excellence of luster, complexion and voice, oratory, optimum strength of physique and sense organs, respectability and brilliance[1-5]. The meaning of Rasayana is Rasa- Plasma, Ayana- path. Rasayana drugs act inside the human body by modulating the neuro-endocrino-immune system and are rich sources of antioxidants. These plants are supposed to prevent aging, strengthen life, brain power and immunity.

The literal meaning of triphala is 'three fruits'. Triphala rasayana is one of the most famous and traditional forms of herbal formulation used by the ayurvedic practitioners to treat or avoid several diseases. The three constituents of triphala are Amalaki (Indian Gooseberry or *Emblica officinalis*), Haritaki (Indian Gallnut or *Terminalia chebula*), and Bibhitaki (Beleric Myrobalan or *Terminalia bellerica*) in equal proportions.

Since Triphala Rasayana balances all the three doshas it is used to stimulate digestion, improves eye sight, controls cholesterol level, heaptoprotective, uroprotective, maintains homeostasis of the body etc.

Preparation of Triphala Rasayana

Although a number of types of Triphala preparations are given in literature the basic three ingredients of Triphala are Amlaki (Indian Goose berry), Haritaki (Indian Gall nut) and Bibhitaki (Beleric myrobalan). This powder is mixed with pure cow ghee and honey and used as a medicine. Each component of triphala have excellent health benefits as mentioned below:

Amalaki

Indian gooseberry fruit – *Emblica officinalis* Gaertn. Amla has properties such as antipyretic, analgesic, as skin care lotion, antioxidant and also used to treat Gonorrhoea, nausea, vomiting, indigestion, nose bleeding etc.[6, 7]

Haritaki

Chebulic Myrobalan fruit rind – *Terminalia chebula*-haritaki has medicinal properties like antioxidant, antimicrobial, antidiabetic, hepato protective, anti-inflammatory and anti-arthritic, anti-mutagenic, anti-proliferative, radio protective, cardio protective, hypo lipidemic, antispasmodic, Immuno-modulatory and antiviral activities.[8]

Vibhitaki

Belliric Myrobalan fruit rind – *Terminalia bellirica.* The fruit rind is reported to have medicinal activities such as antibacterial, antioxidant, hypoglycemic, hepatoprotective, antidiorrhial, antihypertensive, antispasmodic, analgesic, antinociceptive and bronchodialatory.[9]

There are a number of reports supporting the various medicinal benefits of Triphala rasayana. The reports indicate that triphala has medicinal properties like hepatoprotective, chemoprotective, anticancer, radiation protective, antioxidant, anti-arthritic, enteroprotective, anti hyperlipidemic, antibacterial etc.[10-20] The anti radiatation potential of Triphala rasayana was studied Sandhya *et al*, 2006; Jagetia et al, 2002.[21,22] The present study is to know the possible types of bio molecules present in Triphala rasayana by GC MS analysis.

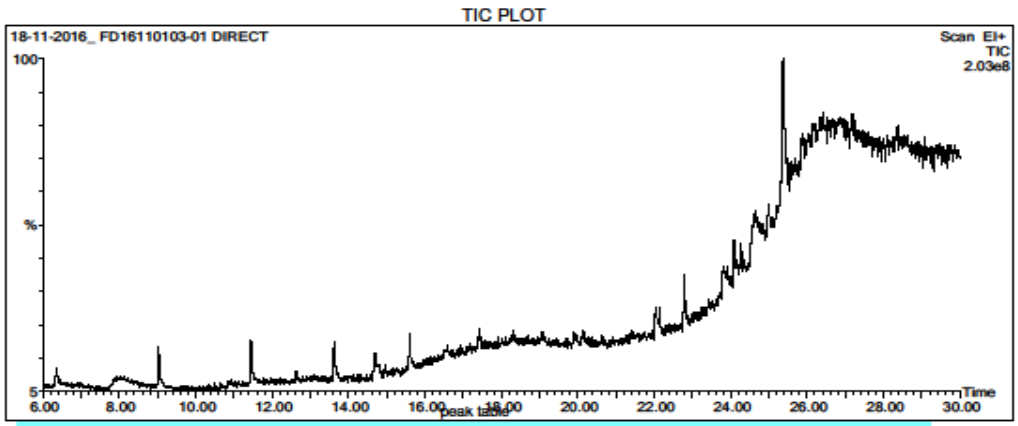
MATERIALS AND METHODS

Triphala Rasayana was procured from standard Ayurvedic vendor at Chennai. The GC MS analysis was performed by standard method.

RESULTS AND DISCUSSION

From the results it seems that comounds like Oleic acid (5.90 % peak value) and á-Sitosterol (5.00% peak value) are present in maximum quantities.

The GC MS results are shown in Figure 1 and Table 1.



#	RT	Area	Area%	Name
1	24.640	3848527	2.34	2-[4-methyl-6-(2,6,6-trimethylcyclohex-1-enyl)hexa-1,3,5-
2	25.364	8198182	5.00	á-Sitosterol
3	26.210	4604798	2.81	1-Monolinoleoylglycerol trimethylsilyl ether
4	26.403	4272751	2.60	1H-2,8a-Methanocyclopenta[a]cyclopropa[e]cyclodecen-11-one,
5	26.840	9684627	5.90	Oleic Acid

Figure 1: GC MS spectrum along with the compounds and the GC MS details.

Table 1: GC MS analysis is shown by the retention time, % peak values of the possible compounds, names of the compounds and their reported medicinal roles.

Sl. No	Retention Time	% Peak Value	Compound	Medicinal value
1	24.640	2.34	2-[4-methyl-6-(2,6,6-trimethylcyclohex-1-enyl)hexa-1,3,5-	Antimicrobial and anti-inflammatory
2	25.364	5.00	á-Sitosterol	á-Sitosterol is known to reduce cholesterol, controls benign prostrate hypertrophy and controls inflammation.
3	26.210	2.81	1-Monolinoleoylglycerol trimethylsilyl ether	1-Monolinoleoylglycerol trimethylsilyl ether with molecular formula C27H54O4 Si2 has many biological activities such as antimicrobial, antioxidant, antiarthritic, anti-inflammatory, antiasthma, diuretic and antidiabetic.[23]
4	26.403	2.60	1H-2,8a-Methanocyclopenta[a]cyclopropa[e]cyclodecen-11-one,	Anti tumor[24]
5	26.840	5.90	Oleic Acid	Oleic acid: Anti-inflammatory, Antiandrogenic, cancer preventive, hypercholesterolemia, 5-alpha reductase inhibitor[25]

The other compounds such as 1-Monolinoleoylglycerol trimethylsilyl ether (2.81 % peak value), 1H-2,8a-Methanocyclopenta[a]cyclopropa[e]cyclodecen-11-one (2.60 % peak value), 2-[4-methyl-6-(2,6,6-trimethylcyclohex-1-enyl)hexa-1,3,5- (2.34% peak value) are less in quantity.

From the table it is clear that these compounds have medicinal properties similar to that of Triphala rasayana. Thus this study indicates towards the scientific validation of Triphala Rasyana as a potent medicine as claimed by ayurvedic literature and practice.

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