

PHYTOCHEMICAL ANALYSIS OF *TRIKARSHIK CHURNA* (POWDER)

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ABSTRACT

Trikarshik a polyherbal combination has been highlighted in Ancient Ayurvedic texts for its digestive, febrifuge, appetite enhancing properties. *Trikarshik* is a combination of three drugs in equal proportion i.e. dried rhizomes of *Zingiber officinale* Roscoe. Roots of *Aconitum heterophyllum* Wall, rhizomes of *Cyperus rotundus* Linn. In the present study phytochemical analysis has been done. *Trikarshik* stands with the total ash content 7.39%, acid insoluble ash 3.14%, water soluble extractives 19.27% which suggests it is easily soluble in water, alcohol soluble extractives 6.58%. Organoleptic study and thin layer chromatographic study was done. Pharmacognostical, physicochemical parameters help to understand the purity, strength and efficacy of drugs for further study.

Keywords: *Trikarshik*, Pharmacognosy, physicochemical parameters.

INTRODUCTION

Ayurveda is the Science of life which gives the knowledge that reveals appropriate and inappropriate, happy or sorrowful conditions of life. It is almighty natural healing system of India. It is sitting on gold-mine of well recorded and well-practiced knowledge of folklore and traditional system of medicine.

It not only deals with the diseased conditions but also normal healthy life that means it indicates treatment and prevention. *Ayurveda* put forward the concept of *Panchabhautikatva* i.e. “everything that exists in the globe is present in human body”¹.

Crunch is that we are unable to interpret everything that is mentioned in *Ayurvedic* compendia. Hence, it is necessary to present *Ayurveda* as evidence based medicine.

Dravyaguna is the strength of *Ayurveda*. “It suggests that every substance on the earth possess medicinal property.”² It explains the pharmacodynamics of herbs and its use in various diseases. Nowadays herbal medicine is making dramatic comeback. Also, scientists are turning to natural products for answer to ailments like cancer, Aids, hepatitis and rheumatoid arthritis, obesity.

Trikarshik a combination of three drugs viz., *Shunthi* (*Zingiber officinale* Roscoe), *Ativisha* (*Aconitum heterophyllum* Wall.), *Musta* (*Cyperus rotundus* Linn.). *Trikarshik* has been mentioned by *Nighantukaras* under the head *Mishrak Gana*³. *Mishrak gana* is the unique entity of *Dravyaguna Vigyana*. It is the combination of drugs having nearly similar attributes. Hence the efficacy of *Mishra Varga* increases due to their cumulative action. *Trikarshik* can be effectively used in this regards.

There are mainly three stages involved in the whole process of Standardization i.e. raw material, processing procedure and finish product. At essential stage quality of raw material is important so that the finish product will be good quality. In *Ayurvedic* herbal preparations many plants are involved hence it is necessary to understand the

properties of raw materials as well as their authentication. Therefore standardization of final product is not only important but also the pharmacognosy and phytochemical study of raw material is essential. As it reveals the specific characteristics of the drug.

Aim: To study Phytochemical properties and pharmacognosy by organoleptic, macroscopic study of *Trikarshik churna* [Powder].

Materials and Method:

Trikarshik churna a combination of 3 drugs in equal proportion (1 *karsha*⁴=12gm) i.e. *Zingiber officinale* Roscoe, *Aconitum heterophyllum* Walland *Cyperus rotundus* Linn has been taken for the present study.

Table1: Contents of *Trikarshik Churna*:

	Shunthi	Ativisha	Musta
Latin Name	<i>Zingiber officinale</i> Roscoe.	<i>Aconitum heterophyllum</i> Wall.	<i>Cyperus rotundus</i> Linn.
Family	Zingiberaceae	Ranunculaceae	Cyperaceae
Part used	Rhizome	Root	Rhizome

Figure 1: Contents of *Trikarshik Churna*: Dried rhizomes of *Zingiber officinale* Roscoe, Dried roots of *Aconitum heterophyllum* Wall, and Dried rhizomes of *Cyperus rotundus* Linn.



Figure 2: *Trikarshik Churna* (Powder)



Methodology:

Market samples of rhizomes of *Shunthi* and *Musta*, roots of *Ativisha* purchased from Pune local market. Drugs were identified and authenticated at Pune University, Department of Botany, Pune and following studies were carried out.

All the study was done as per WHO guidelines and Ayurvedic Pharmacopoeia of India.

Organoleptic tests: Organoleptic tests of *Trikarshik churna* are carried out with the parameters like – Colour, Odour, Surface, Size, Shape, Texture and Taste.

Physico-chemical study: The study reveals any adulteration to drug and determines the presence foreign matter, total ash, total soluble ash, Acid-insoluble ash, Alcohol-soluble extractive, and Water-soluble extractive.

All the tests were carried out as per the guidelines given in Ayurvedic Pharmacopoeia of India¹⁰.

Determination of Foreign Matter:

About 50-100g drug sample was taken and spread out in a thin layer. Foreign matter was inspected by using lens (6x).

Determination of Total Ash:

About 2 to 3 g accurately weighed *Trikarshik Churna* was incinerated in a silica dish at a temperature not exceeding 450⁰ until free from carbon, cool and weighed.

Determination of Acid-Insoluble Ash:

Obtained ash was boiled for 5 minutes with 25ml of dilute hydrochloric acid, insoluble matter was collected on an ashless filter paper, washed with hot water and ignited to constant weight. Percentage of acid-insoluble ash with reference to air dried drug was calculated.

Determination of Alcohol- soluble extractive:

Macerated 5g of air dried drug, coarsely powdered with 100ml of Alcohol of specified strength in a closed flask for twenty four hours, shaking frequently during 6 hours and allowing standing for eighteen hours. Filtered rapidly, taking precaution against loss of solvent, evaporated 25ml of filtrate to dryness in a tare flat bottomed shallow dish, and dried at 105⁰ to constant weight and weigh. Percentage of alcohol-soluble extractive with reference to the air-dried drug.

Determination of Water-soluble extractive:

Macroscopical study of drug is important to understand the external features of the drug, shape; size, texture, and surface are studied under this.

Qualitative Analysis: Qualitative analysis reveals the constituents, functional group of the substance.

Chromatographic study: Thin layer chromatography [TLC] of powder of combination i.e. *Trikarshik* is carried out. TLC is mainly used for separation non-volatile matter. Thin-layer chromatogra-

phy performed on a sheet of silica gel. This layer of adsorbent is known as the stationary phase. After the sample has been applied on the plate, a solvent or solvent mixture (known as the mobile phase) drawn up the plate via capillary action. Toluene ethyl acetate formic acid was used for mobile.

Observations and Results:

The ingredients of Trikarshik are selected for the study. They are consists of dried rhizomes of *Zingiber officinale* Roscoe., roots of *Aconitum heterophyllum* Wall. And rhizomes *Cyperus rotundus* Linn.

Table 2: Macroscopic characters of contents of Trikarshik

	Zingiber officinale Roscoe ⁵	Aconitum heterophyllum Wall ⁶	Cyperus rotundu Linn ⁷
Part used	Dried rhizome of perennial aromatic shrub	Tuberous roots	Dried rhizomes
Size	Thickness varies from 1-2cm, having rough surface	2-8cm in length, 0.4-1.5cm in breadth conical form	5-10cm long 1cm diameter
Colour	Pale buff to brown colour	Whitish grey	External dark brown to internal brick red colour
Other	Fibrous and striated Fracture : Short, fibrous	Fracture : Starchy and chalky white	Rough longitudinally ridges and furrowed, prominent nodes.

Table 3: Showing Organoleptic Study of Trikarshik churna

Test	Result
Colour	Brownish
Taste	Bitter & Astringent
Odor	Aromatic

Table 4: Showing Physicochemical Analysis of *Trikarshik Churna*

Name Of The Test	Result Obtained
Foreign Matter	1.09%
Loss on Drying 110 ^o c	2.16%
Total Ash Content	7.39%
Acid Insoluble Ash	3.14%
Alcohol Soluble Extract	6.58%
Water Soluble Extract	19.27%

Table 5: Showing Thin Layer Chromatography of *Trikarshik Churna* [Water soluble extractive]

Spot	Rf Value	Colour
365 nm (UV)		
1 st	0.87	Yellow
2 nd	0.81	Violet
Iodine		
1 st	0.98	Yellow

2 nd	0.97	Yellow
3 rd	0.89	Yellow
4 th	0.88	Yellow
5 th	0.81	Yellow
6 th	0.76	Yellow
7 th	0.24	Yellow

Table 6: Qualitative analysis of *Trikarshik Churna* [Water soluble extractive]

Qualitative Test	Results
Alkaloid	Negative
Flavonoids	Positive
Sterols	Positive
Tannins	Positive
Carbohydrate	Positive
Amino acid	Positive
Protein	Positive
Saponin	Negative
Resin	Negative

DISCUSSION

At present drug said to be standard on the basis of Pharmacognostic and physicochemical parameters. Ash value reveals the purity of drug. Total ash is the amount of material remains after ignition of, acid insoluble ash is non-physiological ash. The sample of *Trikarshik* contained 7.39% total ash and 3.14% acid insoluble ash that may be due to inorganic material. When moisture content is high the drug may be affected by air borne microorganisms and soon loses its efficacy. Loss on drying of the mixture is 2.16% which is considered as normal. Extractive value gives an idea about the amount of chemical constituents. Water soluble extractives suggest the water soluble constituents of the drug such as sugar, carbohydrate, glycoside, tannin. Water soluble extractive is 19.27%, which indicates that *Trikarshik* is easily soluble in water. While Alcohol soluble extractive is 6.58%. *Trikarshik* is a combination of three drugs often used by various *vaidyas* for its *lekhan*, *pachan* and *deepan* properties. The qualitative analysis revealed the occurrence of flavonoids, sterols, tannins, amino acids,

carbohydrates and proteins. TLC indicates chemical components are easily separable.

CONCLUSION

On the basis of results obtained it can be concluded that the mixture *Trikarshik* is pure and without adulterant.

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