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ANALYTICAL STUDY OF SHATAHWADI GHRITA

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ABSTRACT

Shatahwadi ghrita is an *Ayurvedic* formulation mentioned in *Ashtanga hridaya* in the management of *Timira*. The main contents of this *Ghrita* are *Shatahwa*, *Nalada, Kakoli*, *Ksheerakakoli*, *Yashtimadhu*, Prapoundarika*, Sarala, Pippali, Devadaru.* It's prepared by classical method of *Ghrita kalpana*.

Aim: To prepare and do the physio-chemical study of finished product.

Materials and Methods: *Shatahwadi ghrita* is a polyherbal formulation which is formulated by classical method of *Ghrita paka*. It contains drugs having properties such as *Tridoshahara, Chakshushya* and *Rasayana*.

Results: Standardization of *Shatahwadi ghrita* shows remarkable results regarding Refractive index, saponification value, iodine value, peroxide value etc.

Conclusion: The prepared *Shatahwadi ghrita* matches the physicochemical parameters and can impact good therapeutic impact.

Keywords: *Shatahwadi Ghrita*, Analytical study

INTRODUCTION

Ayurveda is one of the world's oldest holistic healing systems. It came into existence more than 3000 years ago in India. According to *Ayurveda* for a person to be in *Swastha* (healthy)state his or her *Doshas* must be in a balanced state and the tissues and *Malas* work in a normal state[1]. The sensory and motor organs and

mind, *Atma* must be also in pleasant state, so in order to attain this *Ayurveda* has described various forms of medicine such as *Churna*, *Guti*, *Vati, Ghrita Paka*, *Taila paka*, *Lepa, Asava, Arishta* etc. *Sneha kalpana* is a group of products prepared in the form of medicated *Taila* and *Ghrita*. Classically these formulations are having a longer shelf life in comparison to other *Ayurvedic* herbal medication form. It's the only *Kalpana* amongst the four *Kalpanas* which is used through all four modes of administration i.e. *Pana*, *Abhyanga*, *Nasya & Basti*.[2] *Ghrita kalpana* is a kind of formulation which is processed in a manner that both lipid soluble and water soluble active principles of the drugs are transferred into *Ghrita*. *Shatahwadi Ghrita* is a polyherbal formulation which is formulated according to classical *Ghrita Kalpana* method[3]. It mainly contains *Chakshushya*, *Tridoshahara* and *Rasayana* drugs.

Aim and Objective

- Analytical standardization of *Shatahwadi Ghrita*.
- To carry out physio –chemical analysis of *Shatahwadi Ghrita*.

Material and Methods

Collection of Raw Materials: The raw drugs for the study were procured from the hans pharmacy, Premnagar Ashram, Haridwar, Uttarakhand. The final product that is *Shatahvadi Ghrita* was prepared in Hansa Pharmacy, Sidcul, Haridwar, Uttarakhand. The ingredients were identified by PG Department of *Dravyaguna*, Rishikul campus, Haridwar.

Method of Preparation of *Shatahwadi Ghrita*

The *Shatahwadi Ghrita* was prepared by classical method of *Ghrita paka*.

Ingredients of *Shatahwadi Ghrita*

Powders of *Shatapushpa* (Anethum sowa), *Kusta* (saussurea lappa), *Jatamamsi* (nardostachys jatamamsi), *Aswagandha* (Withania somnifera), *Yastimadhu* (glyccerhiza glabra), *Prapoundarika* (saccharum officinarum), *Sarala* (pinus roxburghii), *Pippali* (piper longum*), Devadaru* (cedrus deodar)200gms each

- Cow's ghee-5 kg
- Cow's milk-40litres
- Water -20 litres

To get final product, the contents were subjected to heat till up to *Sneha siddhi lakshana* were observed. Heating was stopped when *Varti* was formed and froth subsided. *Varti* was tested for absence of crackling sound. *Ghrita* was filtered while still hot (approx. 80˚) through a muslin cloth and allowed to cool. After that, the *Ghrita* was packed tightly in glass containers to protect from light and moisture.

The Pharmacodynamics of *Shatahwadi Ghrita*

The mode of action of a drug and its physiological effect can be best understood by the properties of its basic physiochemical factors i.e. *Rasa, Guna, Veerya*, *Vipaka, Karma and Prabhava* of the drugs. These properties affect the *Doshas* and determine their *Doshkarma* activity which in turn corrects the vitiated

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Doshas and maintain the *Doshika* equilibrium of the body.

Analytical Study: Prepared final product (*Shatahwadi Ghrita)* were analysed by employing various analytical parameters.

Organoleptic study: Organoleptic characteristics for various sensory characters like colour, taste, odour etc and was carefully noted down [10] [Table no.1]

Physiochemical analysis: Physiochemical analysis such as Acid value, Peroxide value, Saponification value, Iodine value, Refractive index, tests were carried out. [Table no 2]

Shatahwadi Ghrita was further subjected to **thin layer chromatography (TLC)** study.

TLC Profile Instrument used was Silica plate. The stationary phase used was TLC plate's silica gel F254 and mobile phase was Toluene: Ethyl acetate (90:10). The plate was sprayed with vanillinsulphuric acid reagent and the spots were detected after heating at 105°C for 10 min. Rf value of each spot was recorded.

Heavy Metal Analysis: Heavy metal analysis reveals Lead, Cadmium, Arsenic, Mercury mentioned [13] in [Table no.3]

Microbiological limit test: Microbial load estimation shows total bacterial count and total Yeast and mould count. Test for another specific pathogen is negative defined in [Table no.4]

Table 1: Organoleptic parameters of *Shatahwadi Ghrita*

Properties	***Shatahwadi Ghrita***
Colour	Yellow
Odour	Pleasant
Touch	Unctuous
Taste	Bitter
Appearance	Light

Table 2: Physio – chemical parameters of analysis

Parameters	***Shatahwadi Ghrita***
Refractive index	1.4742
Weight	0.899
Acid value	1.35
Peroxide value	2.76
Saponification value	182.35
Iodine value	33.51

Thin Layer Chromatography (TLC): Thin layer chromatography study (TLC) was carried out fewer than 254 and 366 nm UV to established finger printing profile. It showed Rf values 0.823, 0.753, 0.647 which may be responsible for expression of its pharmacological and clinical actions.

Table 3: Heavy metal analysis

Heavy Metal	**Result**
Lead	2.1 ppm
Cadmium	<0.50 ppm
Arsenic	0.08
Mercury	0.24

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Table 4: Microbial load estimation of formulated *Ghrita*

Total bacterial count (cfu/g)	<10
Total fungal count (cfu/g)	<10
E.coli	Absent
Salmonella SP	Absent
Pseudomonas aeroginosa	Absent
Staphylococcus aureus	Absent

DISCUSSION

Physico-Chemical parameters: Refractive Index- It is the ratio of the velocity of light in a vacuum to its velocity in the substance. It is a fundamental physical property of a substance often used to identify a particular substance, confirm its purity, or measure its concentration. More will be Refractive Index, there will be more concentration of light which facilitates rancidification of *Ghrita* i.e. decomposition of *Ghrita.* Refractive index of the *Shatahwadi Ghrita* was 1.4742.

Acid Value – It is a measure of the amount of Carboxylic acid groups in a chemical compound, such as fatty acid, or in a mixture of compounds as oil fats rancidify, triglycerides are converted into fatty acids and glycerol, causing an increase in acid. Less acid value denotes the less chance of decomposition of *Ghrita* thus increasing both life span and therapeutic value. The acid value of the *Shatahwadi Ghrita* was 1.35

Saponification Value – Saponification value gives an idea about the molecular weight of an oil / Fat. The saponification value and molecular weight of oil are inversely proportion. It is helpful in determining adulteration of given fat by one of the lower or higher saponification value. Saponification value of the *Shatahwadi Ghrita* was 182.35

Iodine Value - It indicates the degree of unsaturation. Greater degree of unsaturation indicates the possibility of the ghee becoming rancid due to atmospheric oxidation. And the iodine value of the *Shathawadi Ghrita* was 33.51

Peroxide Value - it is the most widely used analytical method. It gives a measure of the extent to which an oil/ghee sample as undergone primary oxidation; extent of secondary oxidation may be determined from p-anisidine test. Peroxide value of *Shatahwadi Ghrita* is 2.76

CONCLUSION

Physical test indicates *Shatahwadi Ghrita* is yellowish in colour with bitter taste and characteristic odour. Quantitative chemical analysis shows that in *Shatahwadi Ghrita*, Refractive index-1.4742, Acid value-1.35, Peroxide value- 2.76, Saponification value-182.35, Iodine value-33.51. TLC study of *Shatahwadi Ghrita* represents the presence of various ingredients in the sample and there is not any degradation in the final product. It acts as the fingerprint of the used sample, which can be used as the reference for the preparation of same kind of *Ghrita.*

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