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ANALYTICAL STUDY ON *VIBHITAKADI GHRITA*

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ABSTRACT

Ghrita is regarded as one of foremost *Sneha Kalpana* of *Ayurveda.* Its *chakshushya* property reveals its optimistic action on wellness of eyes as well as curing ocular disorders. *Vibhitakadi Ghrita* is *Sarvanakshi Roganvyopahati* disclosed in a classical text, *Yogaratnakara.* Present study is carried out to broadcast its Pharmacodynamics, Physico-chemical analysis, oragnoleptic properties, heavy metal analysis along with microbiological limit analysis. Thin layer chromatography(TLC) of the *Ghrita* has been also done. All the parameters were found to be in prescribed limits.

KEYWORDS: *Vibhitakadi Ghrita, Sneha Kalpana, Chakshushya, Yogaratnakara.*

INTRODUCTION

Various *Ayurvedic* texts have revealed that internal and external use of *Ghrita* has been shown to play an appreciable role in the management of eye disorders such as *Shushkakshipaka.*[1] *Ghrita* is contemplated as superior owing to its special attribute i.e. *Samskarasya anuvertana* which means *Ghrita* carries the properties of the drug without leaving its inherent properties.[2] This is the solitary nature of *Ghrita* which makes its wider application in different disease conditions by processing it with distinct as per condition.

Internally, *Ghrita* is considered as good *Chakshushya Dravya*.[3] It is used as *Pathya* as well as main line of treatment in various eye disorders. Because of its *Rasayana* property it has also got high utility in preventive ophthalmology too. *Vibhitakadi Ghrita* is mentioned by *Yogaratnakara* in its *Netraroga-chikitsa* and considered it as very efficacious in all eye disorders.[4] *Vibhitakadi Ghrita* is such a *Sneha Kalpana* which is formulated with six ingredients and prepared by general method of *Sneha Kalpana.* The main ingredients of this *Ghrita* are as follows:

- Vibhitaka
- Amlaki
- Haritaki
- Patola
- Nimba
- Vasa

MATERIALS AND METHODS

Collection of Raw Materials

The raw drugs for the preparation of *Vibhitakadi Ghrita* were procured from the Hansa pharmacy, Premnagar Ashram, Haridwar. The *ghrita* was prepared at Hansa Pharmacy, Sidkul, haridwar, Uttarakhand.

Identification and Authentification

The raw drugs were identified and authentified by PG Department of *Dravya Guna*, Rishikul campus, Haridwar.

METHOD OF PREPARATION

Materials used

- *Kalka dravyas* i.e. *Vibhitaka, Amlaki, Haritaki, Patola, Nimba* and *Vasa.* **(Table no.1)**
- *Goghrita*
- *Dravyas* for *Goghrita Moorchana* i.e. *Nagarmotha, Triphala, Sauntha choorna* and *Bijaura nimbu swarasa.*
- Water
- Steel vessel
- Petromax
- Tablespoon for stirring

- Glass container

Procedure

- All the six contents were mixed in equal quantities to form *kalka.*
- *Goghrita* was four parts by weight and then *Moorchana* was done with the help of *Nagarmotha, Triphala, Sauntha choorna* and *Binjaura nimbu bhawana.*
- Water was taken four times of *Moorchhita Goghrita* and was added to the mixture of *Kalka.*
- *Goghrita* was put in a steel vessel and heated slowly.
- Water and *Kalka dravyas* were added to the warm *Ghrita.*
- *Vibhitakadi ghrita* was made as *sidha* by heating the whole mixture on *Mandagni.*
- Intermittent stirring was done to maintain *Mandagni.*
- Heating was done until the *Ghrita sidhi lakshana* appear and then *ghrita-paka* was said to be done.
- The steel vessel was taken out of the fire and the prepared *Ghrita* was filtered with a clean cloth.
- The filtered *Ghrita* was stored in a glass container.

Precautions

- Big size steel vessel was taken to avoid loss of *Ghrita.*

- Be careful while adding *Kalka* and water to the warm *Goghrita.*
- Continuous stirring was done to avoid scrotching of *Kalka.*

Pharmacodynamics of *Vibhitakadi Ghrita*

The mode of action of *Vibhitakadi Ghrita* and its physiological effect can be better disclosed by the properties of physiochemical factors of its contents i.e. *rasa, guna, virya, vipaka* and *Dosha-shamakta*. **(Table no.2).**

Analytical study

Vibhitakadi Ghrita was analysed by implementing a number of analytical parameters.

Organoleptic study

Vibhitakadi Ghrita was evaluated for organoleptic characteristics for numerous sensory characters like taste, odour, smell etc. **(Table no. 3).**

PHARMACEUTICAL EVALUATION

Physico-chemical analysis

It is carried out by performing various analysis tests having parameters such as Description, refractive index at 25ºc, weight/ml (g) at 25ºc, acid value, peroxide value, saponification value, iodine value and viscosity at 40ºc (cps). These parameters were determined as per the API guideline. **(Table no.4)** *Vibhitakadi Ghrita* was further subjected to Thin Layer chromatography (TLC) study.

TLC method

Silica Plate was used. TLC plates silica gel F254 were used as stationary phase while Toluene: Ethyl acetate (90:10) was used as mobile phase. Vanillin-sulphuric acid reagent was sprayed over the plate. The spots were detected on heating the plate at 105ºc for 10 min. RF value for each spot was carefully recorded. **(Figure. 1).**

Heavy metal analysis

It elaborate presence of heavy metals like Lead (Pb), Arsenic (As), Cadmium (Cd) and Mercury (hg) in ppm. **(Table no.5).**

Microbiological Limit Test

This test reveals total bacterial count and total yeast and mould count in cfu/g. Also reveals presence of other specific pathogen which was negative. **(Table no.6).**

RESULTS AND DISCUSSSION

Table no. 1: Ingredients of *Vibhitakadi Ghrita.*

Name of Drug	Latin Name	Part used	Ratio	Form
Vibhitaka	Terminalia Bellirica	Fruit	1 Part	Kalka
Amlaki	Emblica Officinalis	Fruit	1 part	Kalka
Haritaki	Terminalia Chebula	Fruit	1 part	Kalka
Patola	Trichosanthes dioica	Leaf	1 part	kalka
Nimba	Azadirachta indica	Seed	1 part	Kalka
Vasa	Adhota vasica	Bark	1 part	kalka

Table no. 2: Pharmacodynamics of *Vibhitakadi Ghrita.*[5]

Dravya	Rasa	Guna	Virya	Vipaka	Dosha Shamkta
Vibhitaka	*Kashaya*	*Ruksha, Laghu*	*Ushna*	*Madhura*	*Tridosha Shamaka*
Amlaki	*Panchrasa (Lavana Varjit), Amla Pradhana*	*Ruksha, Guru, Sheeta*	*Sheeta*	*Madhura*	*Tridosha Shamaka*
Haritaki	*Panchrasa (Lavana Varjit), Kashaya Pradhana*	*Ruksha, Laghu*	*Ushna*	*Madhura*	*Tridosha Shamaka*
Patola	*Tikta*	*Ruksha, Laghu*	*Ushna*	*Katu*	*Tridosha Shamaka*
Nimba	*Tikta , Kashaya*	*Laghu*	*Sheeta*	*Katu*	*Pitta-Kapha Shamaka*
Vasa	*Tikta , Kashaya*	*Ruksha, Laghu*	*Sheeta*	*Katu*	*Pitta-Kapha Shamaka*

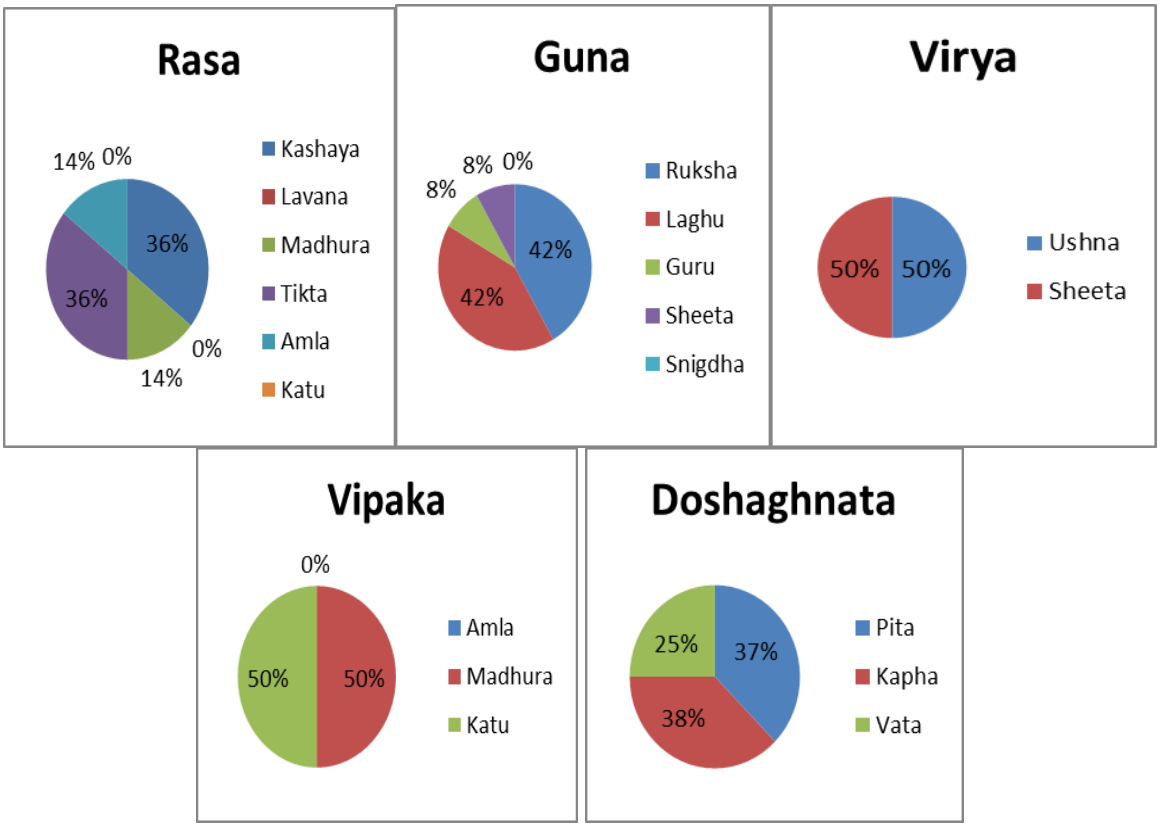

Table no. 3: Organoleptic parameters of *Vibhitakadi Ghrita.*

Properties	*Vibhitakadi Ghrita*
Colour	Green
Odour	Pleasant
Touch	Unctuous
Taste	Tikta
Texture	Granular

Table no.4: Physico-chemical Analysis of *Vibhitakadi Ghrita.*

Parameters	*Vibhitakadi Ghrita*
Refractive index at 25ºC	1.4600
Weight/ ml (g) at 25ºC	0.9052
Acid value	0.95
Peroxide value	2.40
Saponification value	225.67
Iodine value	31.21
Viscosity at 40ºC (cps)	450

Thin layer Chromatoghraphy (TLC)

It was carried out at 254 and 366 nm UV to establish finger printing profile. It has revealed RF values 0.844, 0.777, 0.656, 0.400 which can be concluded to responsible for its pharmacological and clinical actions.

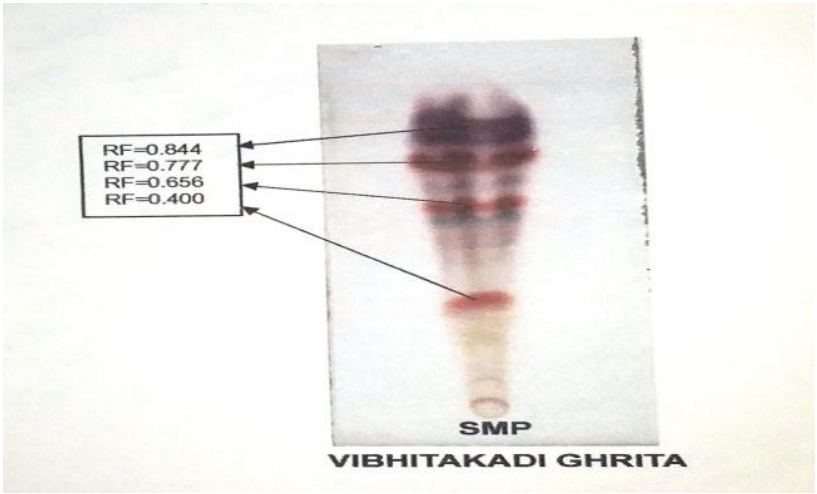

Figure.1.

Table no. 5: Heavy Metals analysis.

Heavy metal	Results
Lead (Pb) ppm	1.79
Arsenic (As) ppm	<0.50
Cadmium (Cd) ppm	0.03
Mercury (Hg) ppm	0.23

Table no. 6: Microbiological Limit Test.

Total bacterial count(cfu/g)	120
Yeast and mould count (cfu/g)	10
E coli	Absent
Staphylococcus aureus	Absent
Pseudomonas aeroginosa	Absent
Salmonella sp.	Absent

CONCLUSION

Ghrita preparation is one of the specific ayurvedic lipid based preparations in which *ghee* is boiled with prescribed *Kashaya* and *kalka* until the evaporation of aqueous phase transfers the contents into oily phase. *Vibhitakadi Ghrita* is prepared in such a way that it proved all the *Sidhi Lakshanas* as mentioned in classical texts i.e.

- *Shabdo heeno agni nikshepta* suggesting water reduction.
- *Phenashanti* suggesting there is no production of any gases resulting in absence of frothing.
- *Vartivata Lakshana* suggesting *kalka dravya* attains *varti* like shape when rolled between fingers.
- *Gandha Varna Rasodhava* suggesting production of specific characteristics of odor, colour and taste as active ingredients are transferred into the *Ghrita* media.

All the important analysis investigations required have been done to prove its efficacy in the management of *Shushkakshipaka (sarvagata roga).* Microbial contamination is within the permissible limit and heavy metals are below permissible limit. This showed that the *Vibhitakadi Ghrita* is efficacious to the patients of *Shushkakshipaka.* All the ingredients were proved to be authentic and compared with the parameters mentioned in API. Also Through the process of *Moorchana* the capacity of the *Ghrita* to absorb the active components of the drug is increased which helps to enhance the potency of the *Siddha Ghrita* which is done very perfectly for the preparation of *Vibhitakadi Ghrita.*

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