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PHARMACEUTICAL ANALYSIS OF PRAPOUNDARIKADYA GHRITA AN AYURVEDIC FORMULATION

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ABSTRACT

Ayurveda is considered one of the most ancient and well-documented systems of medicine, and it is still significant today. India is recognised as the world's botanical garden because it is the world's biggest producer of medicinal herbs. In Ayurveda, the entire treatment is based on just four treatment pods*: Bhishak, dravya, upasthata, and rogi*. *Chikitsa Chatushpada* is another name for it. *Dravya*, also known as *Aushada*, is one of the four factors of *Chikitsa Chatushpada*, and it is ranked second. The wide range of knowledge regarding the drug is very essential to the Physician & Surgeon, because without the proper knowledge of the drug or *aushda* the patient cannot be treated properly. Ayurveda have a special branch of formulations and we formulate an Prapoundarikadya Ghrita mentioned in Shusruta Samhita, Bhaisajya Ratnavli, and Chakardatta Samhita that if we applied on *dushta vrana* than it will cure it. After preparation of Prapoundarikadya Ghrita, we have done the physicochemical, phytochemical and HPTLC analysis of drug for standardization of Prapoundarikadya Ghrita.

KEYWORDS: Prapoundarikadya Ghrita. Pharmaceutical analysis, HPTLC, Quality control Parameters, *Dushta vrana*, wound.

INTRODUCTION

Ayurveda is considered one of the most ancient and well-documented systems of medicine, and it is still significant today. India is recognised as the world's botanical garden because it is the world's biggest producer of medicinal herbs.[1] In Ayurveda, the entire treatment is based on just four treatment pods: *Bhishak, dravya, upasthata*, and *rogi*. *Chikitsa Chatushpada* is another name for it. *Dravya*, also known as *Aushada*, is one of the four factors of *Chikitsa Chatushpada*, and it is ranked second.[2]

The wide range of knowledge regarding the drug is very essential to the Physician & Surgeon, because without the proper knowledge of the drug or *aushda* the patient cannot be treated properly. The drug act as *Dosha Pratyanic, Vyadhi Pratyanic and Ubhaya Pratyanic*. So the drugs which used will be acting as *Ubhaya Pratyanic*. Acharya *Charaka* says that each *dravya* in this universe comprises of a medicinal value it is the Physician`s intellect to select the appropriate one.[3]

Though healing of an ulcer is a natural process various types of microorganism like bacteria with their pathogenic action inhibit the healing process by releasing toxins. So, since ancient time healing of *vrana* is a serious issue. Our *Acharya`s* have explained in detail about *vrana and vrana roopana*. For a good healing to take place the drug must possess two properties i.e., *Vrana Shodhana* - For debriment of wound *Vrana Ropana* – For the healing of wound.[4] Prapoundarikadya Ghrita have both the properties of *vrana shodhan* and *vrana ropana.*[5]

The Ayurveda have the special branch which deals with the preparations of formulations. In this study Prapoundarikadya Ghrita is prepared as per the quotations explained in the classical texts. The Prapoundarikadya Ghrita is herbal preparation. *Sneha kalpana* of Prapoundarikadya Ghrita was done which is a careful pharmaceutical procedure used in Ayurvedic pharmacies to obtain semisolid oleaginous dosage forms that can be used for systemic or superficial application in a variety of diseases.[6]

The analytical study of Prapoundarikadya Ghrita is performed with following parameters- physico-chemical parameters i.e., color, odour, touch, taste, pH, loss on

drying, total ash, acid insoluble ash, water soluble extractive, alcohol soluble extractive and pH. HPTLC is also performed for identification of chemical constituents.[7]

MATERIAL AND METHOD

Selection of Drug

The drug is selected from Chakardatta Samhita from chapter no 43 i.e., *vranashoth chiktsa*. It is also explained about the wound healing properties of this formulation that it has the properties of *vrana shodna* and *vrana ropna*.[8] It is also explained in Bhaisajya Ratnavli *Vrana chiktsa parkran*.[9] In Shushrut Samhita Acharya shusruta mention this formulation in *Vidradhi chiktsa.*[10]

AIM AND OBJECTIVES

- Identification and authentication of raw drugs used for Prapoundarikadya Ghrita.
- Preparation of Prapoundarikadya Ghrita.
- Physicochemical and phytochemical analysis of Prapoundarikadya Ghrita.

Drug Review- Prapoundarikadya Ghrita

The main drug of this formulation is Prapoundarikadya Ghrita. Parts used and its quantity is mentioned in TABLENO-1.

Table 1: Parts and Quantity used in preparation of Prapoundarikadya Ghrita.

Sr.no	Drug Name	Botanical name	Used Part
1.	*Prapoundrika*	Nelumbo nucifera	Flower, *Root - Kalka & swavrasa*
2.	*Manjistha*	Rubia cardifolia	*Choorna & Kalka*
3.	*YastiMadhu*	Glycyrrhiza glabra Linn.	*Choorna & Kalka*
4.	*Khas(Ushir)*	Vetiveria zizanioidis	*Choorna & Kalka/Kwath*
5.	*Padmahak*	Prunus cerasoides	Flower-*Kalka & Swavrasa*
6.	*Haridra*	Curucum longa	Rhyzome- *Powder /Kalka*
7.	*Ghrita*	Butyrum departum	*Go Ghrita*

Collection of Drug

Raw material were collected from botanical garden in Wagodhia, Vadodara, Gujarat.

Raw drugs identification and authentication

Raw drugs identification and authentification was done by the Department of *Dravyaguna*, Parul Institute of Ayurveda, Parul University, Vadodara.

Method of Prapoundarikadya Ghrita Preparation

- First step was to made coarse powder of all collected drugs.
- Murchana of ghrita done by added murchana drugs like amalki, haritki, vibhitki, mustak etc.
- Refined the murchit ghrita in container.
- Added all coarse powder of drugs into goksheer 4litter/kg and water 4litter/kg to prepared the kalka of drugs.
- After added this kalka in murchita ghrita in vessel.
- We put the vessel on gas stove first on high flame than on low flame for did the ghrita paak.
- Confirmation of ghrita paak have done by make varti and crackle sound test.
- After confirmation, off the stove and now prapoundrika ghrita was ready for used for clinical aspect.
- When prepared drug came on normal temperature, we packed it into air tight container.

Table 2: Method of Preparation.

Sr.no	Drug Name	Botanical name	Used Part
1.	*Prapoundrika*	Nelumbo nucifera	Flower, *Root-Kalka & swavrasa 50gm/kg*
2.	*Manjistha*	Rubia cardifolia	*Choorna & Kalka 50gm/kg*
3.	*YastiMadhu*	Glycyrrhiza glabra Linn.	*Choorna & Kalka 50gm/kg*
4.	*Khas(Ushir)*	Vetiveria zizanioidis	*Panchang Choorna 50gm/kg*
5.	*Padmahak*	Prunus cerasoides	Flower-*choorna 50gm/kg*
6.	*Haridra*	Curucum longa	Rhyzome – *Powder 50gm/kg*
7.	*Ghrita*	Butyrum departum	*Go Ghrita 7kg*

Pharmaceutical Study

Pharmaceutical study of Prapoundarikadya Ghrita was conducted at Pharmaceutical department of Parul Institute of Ayurveda, Parul University, Vadodara. All the parameters for pharmaceutical study mentioned for Ghrita were tested and results were evaluated.

Methods of physicochemical evaluation:- Prapoundarikadya Ghrita was analysed by using standard qualitative and quantitative parameters. All the procedures were conducted at G.M.P certified pharmacological lab, Vadodara. The physicochemical parameters i.e, color, taste, pH, loss on drying,total ash,

acid insoluble ash, water soluble extractive and acohal soluble extractive were analyzed.

RESULTS AND DISCUSSION

1 Organoleptic evaluation: Organoleptic characteristics of Prapoundarikadya Ghrita details are mentioned in TABLE NO – 3

Table 3: Organoleptic characteristics of Prapoundarikadya Ghrita.

Samples	Prapoundarikadya Ghrita
Colour	Yellowish
Odour	Aromatic
Touch	Soft
Consistency	Semi solid
Taste	Bitter

2 Physico-Chemical Parameters

Details of Physico-chemicals tests like Loss of drying, Ash value, Value of acid insoluble ash, PH, Rancidity, Specific gravity, Saponification, Acid, Iodine, values are mentioned in TABLE NO – 4.

Table 4: Physico-Chemical Parameters.

	Samples	Prapoundarikadya Ghrita
S. No.	Parameter	Value
1.	Loss on Drying at 110 c(%w/w)	0.021
2.	Total Ash Value(%w/w)	0
3.	Acid Insoluble Ash(%w/w)	0
4.	**pH**	4
5.	Rancidity	Negative
6.	Specific gravity	1.6470
7.	Saponification value	205
8	Acid Value	3.21
9	Iodine value	35

Loss on drying: On drying the samples indicate that the samples were devoid of excess water content and there was no microbial overgrowth or insect infestation present. In this sample loss on drying is 0.021%, it indicates the samples may have good shelf-life and may not decay on storage.

Total ash and Acid insoluble ash: It indicates of contamination, substitution, adulteration. The Low total ash and Acid insoluble ash signifying low levels of inorganic matter and silica content. In this Total ash and acid insoluble ash are 0% and 0%.

PH: The pH was measured to note the acidity or alkalinity of the aqueous solution of the drug. This helps in understanding the pharmacological basis of drug absorption and metabolism. In this sample pH is 4.

Rancidity: Mixed 1.0ml of melted fat and 1.0ml of conc. Hcl in a test tube, add 1.0ml of 1% Phloroglucinol in diethyl ether and mixed thoroughly with the fat acid mixture. A pink color indicates that the fat is slightly oxidized, while a red color indicates that the fat is definitely oxidized.

Specific gravity: Cleaned a specific gravity bottle by shaking with acetone and then with ether. Dried the bottle and noted the weight. Cooled the sample solution to room Temperature. Carefully filled the specific gravity bottle with the test liquid, inserted the stopper and removed the surplus liquid. Noted the weight. Repeated the procedure using distilled water in place of sample solution.

Saponification value: Weighed 2g of the Oil / Fat into a 250 ml RB flask fitted with a reflux condenser. Added 25ml of 0.5M alcoholic potash. Refluxed on a water bath for 30 minutes. Cooled and added 1 ml of Phenolphthalein solution and titrated immediately with 0.5 M Hydrochloric acid (a ml). Repeated the operation omitting the substance being examined (blank) (b ml). Repeated the experiment twice to get concordant.

Acid value: Weighed 2-10g of ghee in a conical flask. Added 50 ml of acid free alcohol-ether mixture (25+25ml) previously neutralized with the 0.1M potassium hydroxide solution and shaken well. Added One ml of Phenolphthalein solution and titrated against 0.1M Potassium hydroxide solution. End point is the appearance of pale pink colour. Repeated the experiment twice to get concordant value.

Iodine value: The sample was accurately weighed in a dry iodine flask. Dissolved with 10ml of CCl4, 20ml of iodine monochloride solution was added. Stopper was inserted, which was previously moistened with solution

of potassium iodide and flask was kept in a dark place at a temperature of about 17^0 C for 30 min. 15ml of potassium iodide and 100ml of water was added and shaken well. This was titrated with 0.1N Sodium thiosulphate, starch was used as indicator. The number of ml of 0.1N sodium thiosulphate required (a) was noted. The experiment was repeated with the same quantities of reagents in the same manner omitting the substance. The number of ml of 0.1N sodium thiosulphate required (b) was noted. The experiment was repeated twice to get concordant values.

Solubility test- Solubility test of Prapoundarikadya Ghrita values are mentioned in TABLE NO – 5 Prapoundarikadya Ghrita is water insoluble, alcohol sparingly soluble and other solvents like chloroform, diethyl ether and carbon disulphide are soluble.

Table 5: Solubility test of Prapoundarikadya Ghrita.

Sample	**Prapoundarikadya Ghrita**
Solvent	**Result**
Water	insoluble
Alcohol	Sparingly soluble
Chloroform	Soluble
Diethyl ether	Soluble
Carbon disulphide	Soluble

High-performance Thin Layer Chromato graphystudy (HPTLC)

Preparation of test solution (T)

Take 0.1ml of sample in a test tube and dilute it with 1ml of Hexane. Mix well. Use the test solution thus obtained for HPTLC fingerprinting. The results are tabulated as under. (IMAGE 1) Preparation of spray reagent (5%Sulphuric acid in Methanol reagent) 5ml Sulphuric acid in cautiously mixed with 100ml Methanol (Image1)

Details of HPTLC profile of all tracks at 254 nm. Under the 254 nm wavelength-Track -1of Prapoundarikadya Ghrita (10.0µL) – 6 spots were detected and starts with respect to retardation factor 0.21, 0.36, 0.47, 0.67, 0.72 and 0.77. Track -2 of Prapoundarikadya Ghrita (10.0µL) - 4 spots were detected and starts with respecttoretardationfactor 0.16, 0.41, 0.55, and 0.64 (IMAGE 2)

Details of HPTLC profile of all tracks at 366 nm. Under the 366 nm wavelength-Track -1of Prapoundarikadya Ghrita (10.0µL) - 7 spots were detected and starts with respect to retardation factor 0.10, 0.16, 0.21, 0.58, 0.77, 0.88, and 0.93.(IMAGE 3)

Details of HPTLC profile of all tracks at 540 nm. Under the 540 nm wavelength-Track -1of Prapoundarikadya Ghrita (10.0µL) - 8 spots were detected and starts with respect to retardation factor 0.10, 0.16, 0.36, 0.53, 0.67, 0.77, 0.88 and 0.93.(IMAGE 4)

DISCUSSION

Any pharmaceutical formulation requires significant research prior to use, as the therapeutic effectiveness is dependent on the quality of the ingredients used in the preparation of the drug.. In this study, Prapoundarikadya Ghrita was prepared according to the classical textual standard operative procedure mentioned in classics. The raw drugs were identified and authenticated before using preparation. The prepared drug, Prapoundrikadhya Ghrita was pharmacologically subjected for physicochemical, phytochemical and HPTLC analysis. The main ingredient of Prapoundarikadya Ghrita is Prapoundrik. Pharmaceutical analysis was done for the standardization of Prapoundarikadya Ghrita in this study. In future, this study will be helpful for standardization of Prapoundarikadya Ghrita and for the preparation of the monography of Prapoundarikadya Ghrita in the Ayurvedic Formulary of India (AFI).

Conflict of Interest: None.

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