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### Original Research Article

## PHYSICOCHEMICAL ANALYSIS OF PRAPAUNDRIKADI GHRITA – A POLYHERBAL AYURVEDIC FORMULATION

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#### ABSTRACT:

In the period of commercialization quality control and standardization of herbal expression is essential in order to assess the quality of medicines for remedial value. Prapaundrikadi Ghrita is a ghee-grounded Ayurvedic valuable expression for the treatment of all kinds of injuries by external operation set up in classical textbooks of Ayurveda. In this study, an attempt has been made to develop a standard for Prapaundrikadi Ghrita. It was prepared by standard laboratory reference of the Ayurvedic formulary of India in Shalya Tantra Department, Faculty of Ayurveda, Institute of Medical Sciences Banaras Hindu University. The physicochemical tests were performed on the sample of Prapaundrikadi Ghrita in solubility, acid value, saponification value, iodine value, total adipose matter, melting point, density, etc. Data has been handed to demonstrate the connection of the styles to the standardization of Prapaundrikadi Ghrita.

**KEYWORDS:-** Prapaundrikadi, Ghrita, Polyherbal, Ayurveda

#### INTRODUCTION-

Ayurveda is considered one of the most ancient and well-proven systems of drugs. The wide range of knowledge regarding medicine is veritably essential to the Physician & Surgeon because, without the proper

knowledge of the medicine, the case cannot be treated duly. Acharya Charaka says that each dravya in this macrocosm comprises a medicinal value it's the physician's intellect to elect the applicable one<sup>(1)</sup>. Though healing of an ulcer is a natural process colorful types of microorganisms like bacteria with their pathogenic action inhibit the healing process by releasing toxins. So, since ancient times healing of Vrana is a serious issue. Our Acharya has explained in detail about Vrana and Vrana ropana. For a good healing to take place, the medicine must retain two parcels i.e., Vrana Shodhana (debridement of crack) and Vrana Ropana (healing of crack),<sup>(2)</sup> and Prapaundrikadi ghrita possess both the tribes.<sup>(3)</sup>

Ayurveda has a special branch that deals with the manufacturing of herbo-mineral preparation. In this study, Prapaundrikadi Ghrita is prepared as per the citations explained in the classical textbooks. Prapaundrikadi Ghrita is an herbal medication as described by our Acharyas. Sneha Kalpana of Prapaundrikadi Ghrita was done to obtain semisolid oleaginous dosage forms that can be used for superficial application in a variety of diseases.<sup>(4)</sup> The logical study of Prapaundrikadi Ghrita is performed with the following parameters- physico- chemical parameters i.e., color, odor, touch, taste, pH, loss on drying, total ash, acid undecidable ash, water insoluble extractive, alcohol insoluble extractive and pH.

It should be famed that herbal medicine standardization isn't new in Ayurveda. In the classics, it points out in a codified manner i.e. Grahya Lakshana, Method of collection, etc. for raw medicine, Siddhi Lakshanas for the final product and for a cure, Alpamatram, Mahavegam, Bahudosha haram, etc. parcels are mentioned in Ayurvedic classics. Besides this, so numerous abecedarian norms regarding medicines are available in our classics, which are primitive and limited to the time needed at that stage but now there is an addition to physical test and identification i.e. chemical composition. Prapaundrikadi Ghrita is a ghee-grounded expression useful for injuries, painful ulcers, injuries caused by heat or fire, and deep injuries by external operation as per the classical textbooks of Ayurveda.

### **Aim and Objectives –**

- I.** Identification and authentication of raw drugs used for Prapaundrikadi Ghrita.
- II.** Preparation of Prapaundrikadi Ghrita.
- III.** Physicochemical and phytochemical analysis of Prapaundrikadi Ghrita.

### **Material & Methods:**

#### **Selection of Drug**

Several indigenous drugs have been mentioned for the beneficial effect of wound healing in ancient Ayurvedic classics along with many formulations for wound healing. One such formulation is Prapaundrikadi Ghrita which is described in *Chakradutta in VranaSotha Chikitsa* Chapter no 44,<sup>(5)</sup> also explained in *BhaisajyaRatnavli Vrana chikitsaparakran*<sup>(6)</sup>, In *Shushrut Samhita Acharya Shusruta* mention this formulation in *Vidradhi Chikitsa*<sup>(7)</sup> and is been used by virtue of its *Vrana ropana* property.

## Drug Review- Prapaundrikadi Ghrita

The main drug of this formulation is Prapaundarik. The parts used and their quantity is mentioned in table no 1.

**Table 1: Parts used in the preparation of Prapaundrikadi Ghrita.**

Sr.no	Drug Name	Botanical Name	Used Part
1.	<i>Prapaundarik</i>	Nelumbo nucifera	Flower, <i>Root - Kalka &amp; swavrasa</i>
2.	<i>Manjistha</i>	Rubia cardifolia	<i>Choorna &amp; Kalka</i>
3.	<i>YastiMadhu</i>	Glycyrrhiza glabra Lin	<i>Choorna &amp; Kalka</i>
4.	<i>Ushir</i>	Vetiveria zizanioidis	<i>Choorna &amp; Kalka/Kwath</i>
5.	<i>Padmak</i>	Prunus cerasoides	<i>Flower-Kalka &amp; Swavrasa</i>
6.	<i>Haridra</i>	Curucum longa	<i>Rhizome- Powder /Kalka</i>
7.	<i>Ghrita</i>	Butyrum departum	<i>Go Ghrita</i>

### Collection of Drug

- Raw materials was collected from the local market of Varanasi.
- Raw drugs identification and authentication:
- Raw drugs identification and authentication was done by the Department of Botany, Institute of Science, BHU, Varanasi with voucher specimen as:

1. *Rubiacordifolia* Linn. (*Rubia*. 2021/1)
2. *Glycyrrhiza glabra* Linn. (*papiliono*. 2021\14)
3. *Prunus cerasoides* D. Don (*Rosa*. 2021/1)
4. *Sacchrum officinarum* Linn. (*Poa*. 2021/5)
5. *Curcuma longa* Linn. (*Zingibera*. 2021/8)
6. *Vitiveria zinzanoides* (L) Nash. (*Poa*. 2021/6)

### Method of Prapaundrikadi Ghrita Preparation

- i. The first step was to make a coarse powder of all collected drugs.
- ii. Murchana of ghrita is done by adding murchana drugs like amalki, haritki, vibhitki, mustak etc.
- iii. Refined the murchit ghrita in the container.
- iv. Added all coarse powder of drugs into go ksheer 4litter/kg and water 4litter/kg to prepare the kalka of drugs.
- v. After adding this kalka in murchita ghrita in the vessel.
- vi. We put the vessel on the gas stove first on high flame then on low flame for the ghrita paak.
- vii. Confirmation of ghrita paak has been done by making varti and crackle sound tests.
- viii. After confirmation, off the stove, and now Prapaundrikadi ghrita was ready for use in the clinical aspect.
- ix. When the prepared drug came to normal temperature, we packed it into an airtight container.

**Table 2: Method of Preparation.**

Sr.no	Drug name	Amount taken
1.	Prapaundarika	50gm/kg
2.	Manjistha	50gm/kg
3.	Madhuka	50gm/kg
4.	Usher	50gm/kg
5.	Padmak	50gm/kg

6.	Haridra	50gm/kg
7.	Go ghrita	7kg

## RESULT AND DISCUSSION

Organoleptic evaluation: Organoleptic characteristics of Prapaundrikadi Ghrita details are mentioned in Table no – 3

**Table 3: Organoleptic characteristics of Prapaundrikadi Ghrita.**

Color	Yellow
Odor	Aromatic
Touch	Soft
Consistency	Semi solid
Taste	Bitter

**Table 4: Physico-Chemical Parameters(conducted in IIT,BHU)**

Sr.no	Sample	Prapaundrikadi Ghrita
	Parameter	Value
1.	Specific gravity at 40 <sup>0</sup> c	1.056
2.	Weight /ml	0.89
3.	Ph at 35 <sup>0</sup> c	5.49
4.	Loss on drying at 105 <sup>0</sup> c (%by mass)	1.22
5.	Refractive index at 35 <sup>0</sup> c	1.38
6.	Viscosity at 40 <sup>0</sup> c(mPas)	1.26

7.	Iodine value	5.66
8.	Saponification value	245.49
9.	Acid value	4.98
10.	Peroxide value	0.13
11.	Free fatty acid	0.822
12.	Total fatty matter(%by mass)	98.29

**Loss on drying:** On drying the samples indicate that the samples were devoid of redundant water content and there was no microbial overgrowth or nonentity infestation present. In this sample loss on drying is 1.22, it indicates the samples may have good shelf- life and may not decay on storehouse.

**Specific gravity :** It is a rate of weight of material in reference to weight of water for constant volume. The weight of lipid material is affected by introductory constitution, dissolved ingredients used during the processing of expression. It also changes due to the effect of temperature during the process.( Halдар et al., 2013; Sharma et al., 2016).

**pH:** is the measure of hydrogen ion attention; a measure of the acidity or alkalinity of a result. pH lower than seven are acidic, while those with pH more than seven are introductory or alkaline. This helps in understanding the pharmacological base of medicine immersion and metabolism. In this sample pH is 5.49

**Refractive index-** It's the rate of the haste of light in a vacuum to its haste in the substance. It's a abecedarian physical property of a substance frequently used to identify a particular substance, confirm its chastity, or measure its attention. Further will be Refractive index, there will be more attention of light which facilitates corruption of Ghrita. Refractive index of the Prapaundrikadi Ghrita was 1.38

**Iodine Value-** This value determines the quantum of unsaturated adipose acids in the form of double bond which reacts with iodine. High iodine value indicates fats are rich in poly- unsaturated adipose acids( PUFA). It indicates the degree of unsaturation. Greater degree of unsaturation indicates the possibility of the ghee getting rancid due to atmospheric oxidation. And the iodine value of the Prapaundrikadi Ghrita was 5.66

**Saponification Value –** Saponification value gives an idea about the molecular weight of an oil painting Fat. The saponification value and molecular weight of oil painting are equally proportion. It's helpful in

determining contamination of given fat by one of the lower or advanced saponification value. It's the measure of average molecular weight( or chain length) of all adipose acids present in the fats( Kadibagil and Sarashetti, 2017). It's said that in manufacture of treated ghee phrasings, due to process of hydrolysis, emancipation of low molecular weight SCFA( short chain adipose acids) is carried out. Saponification value of the Prapaundrikadi Ghrita was 245.49

**Acid Value** – It's a measure of the quantum of Carboxylic acid groups in a chemical emulsion, similar as adipose acid, or in an admixture of composites as oil painting fats rancidify, triglycerides are converted into adipose acids and glycerol, causing an increase in acid. lower acid value denotes the lower chance of corruption of Ghrita therefore adding both life span and remedial value. The acid value of the Prapaundrikadi Ghrita was 4.98

**Peroxide Value**- it's the most extensively used logical system. It gives a measure of the extent to which an oil painting/ ghee sample as experienced primary oxidation; extent of secondary oxidation may be determined from p- anisidine test. Peroxide value of Prapaundrikadi Ghrita is 0.13

**Solubility test of Prapaundrikadi Ghrita** values are mentioned in Table no. 5

Prapaundrikadi Ghrita is water insoluble, alcohol sparingly soluble and other solvents like chloroform, diethyl ether and carbon disulphide are soluble.

**Table 5: Solubility test of Prapaundrikadi Ghrita.**

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

## DISCUSSION

Any pharmaceutical expression requires significant exploration previous to use, as the remedial effectiveness is dependent on the quality of the constituents used in the medication of the medicine. This study prepared Prapaundrikadi Ghrita according to the classical textual standard operative procedure mentioned in the classics. The raw medicines were linked and authenticated before using medication. The set drug, Prapaundrikadi Ghrita was pharmacologically subordinated for physicochemical, and phytochemical analysis. The main component of Prapaundrikadi Ghrita is Prapaundarik. Pharmaceutical research was done for the standardization of Prapaundrikadi Ghrita in this study. In the future, this study will be helpful for the standardization of Prapaundrikadi Ghrita and for the medication of the monograph of Prapaundrikadi Ghrita in the Ayurvedic Formulary of India( AFI).

**Conflict of Interest:** None.

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