

## A Preliminary Physico Chemical Assay of Jati Kalpa Ghrita - A Pilot Study

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### ABSTRACT

The problem of wound healing has been dealt at various levels since the advent of humanity and even today is a huge scope for researchers to work out and find a better solution for wound healing. The response of living tissue to injury forms the foundation of all surgical practice. Indeed, from a biological viewpoint, tissue injury & its sequelae constitutes majority of general medical problems. Wound healing is phenomenon where not only surgeons nowadays even other scientists are also involved. To find a better tool many herbs were being constantly studied. The drugs having wound healing activity were brought together and ghee out of which was prepared. Before evaluating efficacy of the drug clinically and experimentally the selected drugs were tested for the genuinity by pharmacognosy method later after preparing the formulation by pharmaceutical standards. Similar characters like trichome, fiber, spiral vessels, prismatic crystals, tannins, epidermal cells, starch were noted in all the drugs. These characters are known for serving the objective of wound healing. This compound was analyzed through qualitative and quantitative analysis by Physico-chemical parameters. It is inferred that the formulation meets the minimum qualitative standards as reported in the API at a preliminary level.

**Keywords:** Jati Kalpa Ghrita; Pharmacognosy; Phytochemistry.

### INTRODUCTION

The art of healing denotes to surgery is a major challenge to the surgeons, which has been described so extensively in Ayurveda Shalya Tantra, that yet each measure needs the scientific touch in explanation. In this context different types of Vranas with

their management have been slated in Ayurvedic Shalya chikitsa as per clinical observations. In fact, Vrana/Wound/Ulcer and healing are the two sides of the surgical coin, on which an expert surgeon has to play his role very sincerely.

The term 'Vrana' is derived from the verbal root 'Vrana gatravichoorane' which means splitting/tearing of the body tissues. Discontinuity of tissue is either due to pathology inside the body or due to extrinsic causes.

Wounds are common place from childhood to old age and are necessary to surgical entry. Dustha vana is one such long standing ulcer with profuse discharge and slough, where removing the debris and enabling drug to reach the healthy tissue is more important. The mission of the wound healing is to

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increase our basic understanding of the molecular and cellular events of the cellular repair and wound healing processes, and to use this information as the basis for developing new therapies that minimize the adverse consequences of wound injuries. Such novel therapies could enhance cellular repair, promote rapid wound closure, minimize hypertrophic scarring, or control scar contracture. After thorough review of the above research works it is to be stated that the different single or combined drugs have been taken trial for healing the wound. It shows a group of drugs having ropana property when grouped and used may give better results. In this regard an innovative combination of drugs having wound healing property was formulated and assigned name as Jati Kalpa Ghrita.

Before evaluating efficacy of the drug clinically and experimentally the selected drugs were tested for the genuinity by pharmacognosy method later after preparing the formulation by pharmaceutical standards. Proper identification and Standardization of the drug is essential. Each and every drug has its own physical and chemical characteristics that help for separating it from other closely related drugs. To validate the standardization of the drug, physicochemical studies by various parameters are need. Chromatographic techniques were adopted for the separation of active moieties present in the formulation. Hence, an attempt has been made to standardize Jati Kalpa Ghrita, an Ayurvedic Medicine based on their TLC fingerprint profile.

## AIMS & OBJECTIVE

- Pharmacognostical study of powdered drugs of compound formulation Jati Kalpa Ghrita.
- Physico-chemical analysis of Jati Kalpa Ghrita

## MATERIALS & METHODS

The study involved the following operating procedures:

- Collection, identification and authentication of raw drugs.
- Preparation of the drug at Pharmacy.
- Phytochemical analysis of the compound drug.

### Pharmacognostical Study

Collection, identification and authentication of raw drugs:

The raw drugs for the study were procured from the Pharmacy of IPGT&RA, Gujarat Ayurved University, Jamnagar. The ingredients and the part used are given in the table no.1. The raw drugs are identified and authenticated by the department of Pharmacognosy of IPGT &RA, Gujarat Ayurved University, Jamnagar. The identification was carried out based on the morphological features, organoleptic features and powder microscopy of the individual drugs. The API standards were used for the authentication.

**Table 1.** Pharmacognostical study of Ingredients of Jati Kalpa Ghrita

Sl No	Name of Herb	Part	Raw	Colour	Taste	Smell	Powder nature	Characters identified
1	Jati Patra	Leaf	Powder	Brownish	Bitter	Aromatic	Fine	Trichome, Prismatic crystals, Starch with hilum, Tannin content cells, Stomata, Epidermal cells

2	Nimba Patra	Leaf	Powder	Green	Bitter	None	Fine	Epidermal cells, Rosette crystals of calcium  oxalate, Fiber, Palisade parenchyma, Spongy parenchyma, Stomata, Unicellular trichome, Annular vesels
3	Patola Patra	Whole plant	Powder	Dark Brown	Bitter	None	Fine	Simple & compound starch grains, Rosette  crystals of calcium oxalate, Pitted, Annular & Spiral vessels, Trichome with base, multicellular & wary, Wavy margin Epidermal cells, Stomata, Fiber with wide lumen, Tannin, Lignified parenchyma
4	Sariva	Root	Powder	Brown	Sweetish	Aromatic	Fine	Starch grains- simple, compound with hilum,  Pitted vessels, Lignified parenchymatous cells, Cork in surface view, Prismatic crystals, Latex content, Tannin, Trichome, Rosette crystal
5	Karanja	Seeds	Powder	Yellowish- cream	Bitter	Unpleasnat	Fine	Brown pigment, Fiber, Mesophyll cells, Oil  globules, Palisade parenchymatous, Spongy parenchymatous

6	Usheera	Root	Powder	Light yellow to brown	Slightly bitter	Strong aromatic	Fine	Colouring matter, Fiber, Starch grains, Pitted, vessels, Rosette crystals
7	Yashtimadhu	Root	Powder	Yellowish brown	Sweet	Faint and characteristic	Fine	Brown content, Lignified Fiber, Prismatic crystals, Starch grains, stones
8	Manjishta	Stem	Powder	Reddish	Bitter	None	Fine	Acicular crystals, orange red colouring matter, Cork cells in surface view, Border pitted vessels, Lignified parenchyma cells, Fibers, Warty Trichome
9	Lodhra	Bark	Powder	Yellowish brown	Astringent, slightly bitter	None	Fine	Cork cells, Prismatic crystals, Fiber, Pitted vessels, Starch grains, Scleroids, Stone cells
10	Haridra	Rhizome	Powder	Orange to reddish	Bitter	Characteristic	Fine	Annular vessels, Cork in tangential view, Resin, Spiral vessels, Starch grains, Parenchyma
11	Daruharidra	Root	Powder	Yellowish brown	Bitter	None	Fine	Lignified Fiber, Lignified parenchyma, Prismatic crystals, Scleroids
12	Padma	Flower	Powder	Dusty brown	None	None	Fine	Warty Trichomes, Pollen grains, Fibers, Beaded parenchyma cells
13	Dhataki pushpa	Flower	Powder	Brown	Astringent	None	Fine	Parenchyma cells, Epidermal cells, Colouring matter, Fiber, Rosette crystals, Trichome, Pollen grain

## RESULTS & DISCUSSION

The crude drugs obtained were genuine as per standards cited by CCRAS. Similar characters like trichome, fiber, spiral vessels, prismatic crystals, tannins, epidermal cells, starch were noted in all the drugs. These characters are known for serving the objective of wound healing. Ghee contains beta carotene and Vitamin E and both are known anti oxidants. In the process of evaluating the activities of natural compounds, it has been found by means of sophisticated research that when herbs are mixed with ghee, their activity and utility is potentiated.

### Preparation of the Drug at Pharmacy

#### METHOD OF PREPARATION OF JATI KALPA GHRITA

Preparation of Coarse powder: Above said herbal ingredients are made into coarse powder & divided

**Table 2.** Organoleptic Parameters of Jati Kalpa Ghrita

Sr.No.	Physical Properties	Jati Kalpa Ghrita
1	Odour	Aromatic
2	Taste	Not tasted
3	Colour	Green
4	Touch	Smooth

into two parts. Out of this the major part was used for decoction, whereas the other was used for making kalka (paste).

Preparation of Kwatha (decoction): Decoction was based on Sharangadhara Samhita's general rule by mixing above said coarse powder of the drugs with water in the ratio of 1:8, which was thereafter heated at medium temperature, till it reduced to one fourth

of its original quantity.

Preparation of Kalka (paste): The second part of the raw drug was taken and mixed with required quantity of water to convert into paste form.

Ghritha Paka: Thereafter, one part of paste was mixed with 1/8th part of above made decoction & 1/4th part of cow's ghee. The mixture was heated on medium flame till the water content evaporated. After examination of Ghritha Paka as per Sharangdhara text, prepared Ghritha was preserved in air-tight steel containers.

Phytochemical assay of Jati Kalpa Ghrita:

Physico-chemical study: Jati Kalpa Ghrita was analyzed by using qualitative and quantitative parameters at Pharmaceutical Chemistry Laboratory of I. P. G.T & R. A., Gujarat Ayurved University, Jamnagar.

**Organoleptic Character:** the characters of the sample are tabulated in table. 2

**Physic – chemical parameters:** The ghee was evaluated for physico chemical parameters like Refractive index at 40 c, Specific gravity at 40/40 c, Acid Value, Iodine Value, Saponification value and Loss on Drying. The results are sited at table no.3

**Table 3.** Physico - Chemical Parameters

Sl. No.	Test	Result
1	Refractive index at 40°C	1.4620
2	Specific gravity at 40/40°C	0.9107
3	Acid value	0.84
4	Iodine value	30.72
5	Saponification value	231.21

Analytical study showed all the parameters like refractive index, saponification value, acid value, iodine value and specific gravity all were similar as per standard valuee.

The findings of thin layer chromatography of Jati Kalpa Ghrita at 254nm and 366nm UV light are as follows-

## CONCLUSION

The ingredients were identified and authenticated pharmacognostically and were used for the preparation. The formulation was subjected to phytochemical, physico-chemical, TLC and HPTLC

Track	254 nm		366nm	
	Number of spots	R <sub>f</sub> value	Number of spots	R <sub>f</sub> value
1	4	0.03	5	0.03
		0.16		0.45
		0.53		0.50
		0.91		0.64
				0.81
2	5	0.03	5	0.03
		0.15		0.43
		0.53		0.57
		0.69		0.69
		0.90		0.75
By spraying Liberman Buckard Reagent				
S. No.	Spray	Number of spots		R <sub>f</sub> value
1	Liberman Buckard Reagent	4		0.32
				0.4
				0.72
				0.88

TLC of Jati Kalpa Ghrita shows 5 spots under 366 nm U.V. at hRf 0.03, 0.45, 0.50, 0.64 and 0.81 in track 1. In track 2, five spots were noted at hRf 0.03, 0.43, 0.57, 0.69 and 0.75. Where as in 254 nm UV four zones visible at hRf 0.03, 0.16, 0.53 and 0.91 in track 1. While in Track 2, five spots were noted at hRf 0.03, 0.15, 0.53, 0.69 and 0.90. Thin Layer Chromatography of Jati Kalpa Ghrita after spraying Liberman Buckard Reagent followed by heating and then visualized in day light shows 4 prominent spots at hRf 0.32, 0.4, 0.72 and 0.88.

studies. It is inferred that the formulation meets the minimum qualitative standards as reported in the API at a preliminary level. The inference from this study may be used as reference standard in the further quality control researches. Clinical evaluations of Jati Kalpa Ghrita results are encouraging.

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