

Research Article

Pharmaceutico - analytical study of oleaginous formulation: Darvyadi Ghrita

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ABSTRACT:

Darvyadi ghrit was processed as per the process of *snehapaka* procedure described in ayurvedic classical texts. *snehakalpana* is very important topic of *bhaishyajya Kalpana* with the help of this, Active principles of herbal drugs can be extracted and incorporated into *Sneha* to achieve its maximum efficacy. *Darvyadi ghrit* is a herbal preparation mentioned in *sushrut uttartastra* sthan¹ which is specifically indicated in *Darun tridoshaj atisara* (chronic diarrhoea). Contents of the ghrit are *Daruharidra* (*Beberis aristata*), *twak* (dalchini), *pippali* (*piper longum*), *shunthi* (dry ginger), *laksha* (*laccifer laca*), *indrajava* (*kutaja beej-holorrhena antidystrica*), *kutaki* (*picrorhiza kurrooa*), go-ghrit as a base and water. All the ingredients were mixed in go-ghrit and heated on low-medium flame until *Sneha siddhi lakshan* appears. After complete achievement of *Sneha siddhi lakshan ghrit* was filtered to obtain the finished product. In this manner sample of *darvyadi ghrit* was prepared. The main aim of this study to compile, analyse various ayurvedic textual references with contemporary literatures on *Sneha kalpana*. To understand the changes that occurred during the preparation *darvyadi ghrit* was analyzed by using modern parameters such as acid value, saponification value and so on. After analysis it was found that the specific gravity of *darvyadi ghrit* was 0.9158. Iodine value of *darvyadi ghrit* is 37.5. The saponification value of *darvyadi ghrit* is 225. The unsaponifiable matter is 1.4%.

KEY WORDS: *Sneha Kalpana, darvyadi ghrit, analysis, standardization*

INTRODUCTION:

Darvyadi ghrit is polyherb formulation w. s. r. to *sushrut Samhita uttartastra* sthan of Ayurveda representing the group of *snehakalpana*. In this present study the selected *darvyadi ghrit* contained *kalka dravya* of *daruharidra*², *twak*, *shunthi*, *pippali*, *laksha*, *kutaj beej* and *kutaki*, *ghrit* as a *Sneha dravya* and *kwath* of above drugs as a *drav dravya*. With help of *Sneha Kalpana* active principles of the drugs are incorporated in to *Sneha*, in this *Ghrit, Taila, Vasa, Majja* like fatty substances can be used as a base. *Daruharidra* is one of the most extensively used in ayurvedic medicine due to its medicinal properties. *Darvyadi ghrit* is an important formulation specifically mentioned in *sushrut uttartastra sthan* as well as in many classical text books of Ayurveda with different composition, for the treatment of different disorders. *Snehakalpana* specifically medicated *ghrit* or *taila* is unique oleaginous dosage form used for both topical as well as systemic administration. *Darvyadi ghrit* indicated for treatment types of *atisara (vataj, pittaj and kaphaj)* as well as *Atidarun atisara*¹ (chronic

diarrhoea) In Ayurveda diseases occurred due to vitiation of three vital energies in the body i. e. *vata, pitta* and *kapha*, Also it is classified under mental, social and spiritual causes. The standard of quality of any medicine is quite important for the reproducibility of the therapeutic effect, certain ayurvedic medicines of a different kind. The chemical changes that occurred during the process on account of heating of *kalka dravya, kwath* and *go-ghrit* was observed in the present study. This would help us to determine the efficacy of *darvyadi ghrit* for the above cited therapeutic purpose.

Aims and objectives:

1. Identification of raw materials.
2. Authentication of raw materials.
3. To study the literature of *Sneha Kalpana*
4. To prepare the *Darvyadi ghrit* according to ayurvedic literature
5. Analytical study of *Darvyadi ghrit*.

MATERIALS AND METHODS:

Collection of best samples of raw materials, till the preparation of *Darvyadi ghril* is dealt step by step in this study and study was planned in the following steps.

Procurement of drugs:

All the required ingredients namely *Daruharidra*³ (*berberis aristata*), *twak* (*Cinnamomum zeylanica*), *pippali* (*piper longum*), *shunthi* (dry ginger), *laksha* (*laccifer laca*), *indrajava* (*kutaja beej-Holorrhoea antidysentrica*), *kutaki* (*Picrorhiza kurroa*), *Go-ghrit* (cow's ghee) were procured, identified and collected from local ayurvedic shop.

Table No. 1: Showing contents of darvyadi ghril

Contents	Botanical name
<i>Daruharidra</i>	<i>Berberis aristata</i>
<i>Twak</i>	<i>Cinnamomum zeylanica</i>
<i>Pippali</i>	<i>Piper longum</i>
<i>Shunthi</i>	<i>Zingiber officinale</i>
<i>Laksha</i>	<i>Laccifer laca</i>
<i>Indrajava</i>	<i>Holorrhoea antidysentrica</i>
<i>Kutaki</i>	<i>Picrorhiza kurroa</i>
<i>Go-ghrit</i> (cow's ghee)	-

Table No. 2: Showing raw drug analysis of daruharidra (*Berberis aristata*)

Test	Specification	Result
Appearance	Dry Bharad	Dry Bharad
Colour	Yellowish brown	Light yellowish brown
Taste	bitter	bitter
Odour	faint	Faint
Moisture content	NMT 5%	3.7%
Foreign matter	NMT 2%	NIL
Ash	NMT 14%	6.82%
A I A	NMT 5%	1.14%
A S E	NLT 6%	6.68%
W S E	NLT 8%	8.80%

Table No. 3: Showing raw drug analysis of Kutaki

Test	Specification	Result
Appearance	Dry Rhizomes	Dry Rhizomes
Colour	Grayish brown	Dark Brownish black
Taste	pleasant	pleasant
Odour	bitter	bitter
Moisture content	NMT 5%	3.2%
Foreign matter	NMT 2%	NIL
Ash	NMT 7%	4.10%
A I A	NMT 1%	0.43%
A S E	NLT 10%	13.61%
W S E	NLT 20%	24.50%

Table No. 4: Showing raw drug analysis of Indrayava

Test	Specification	Result
Appearance	Dried elongated seeds	Dry long seeds
Colour	Light brown	Light brown
Taste	bitter	bitter
Moisture content	NMT 5%	3.0%
Foreign matter	NMT 2%	NIL
Ash	NMT 6%	4.42%
A I A	NMT 3%	0.94%
A S E	NLT 20%	23.16%
W S E	NLT 30%	35.40%

Table No. 5: Showing raw drug analysis of Laksha

Test	Specification	Result
Appearance	Dried Bharad	Dried Bharad
Colour	Dried Bharad	Reddish brown
Taste	Herbaceous	Herbaceous
Moisture content	NMT 5%	3.15%
Foreign matter	NMT 2%	NIL
Ash	NMT 3%	1.74%
A I A	NMT 2%	0.56%
A S E	NLT 85%	87.52%
W S E	NLT 5%	8.24%

Table No. 6: Showing raw drug analysis of Pippali

Test	Specification	Result
Appearance	Fine powder	Fine powder
Colour	brown	brown
Odour	aromatic	aromatic
Taste	pungent	Strongly pungent
Moisture content	NMT 5%	3.8%
Ash	NMT 7%	6.46%
A I A	NMT 0.5%	0.18%
A S E	NLT 5%	9.61%
W S E	NLT 7%	11.68%

Table No. 7: Showing raw drug analysis of shunthi

Test	Specification	Result
Appearance	Fine powder	Fine powder
Colour	Light yellow	Light yellow
Odour	aromatic	aromatic
Taste	pungent	pungent
Moisture content	NMT 5%	3.5%
Ash	NMT 6%	3.28%
A I A	NMT 1.5%	0.63%
A S E	NLT 3%	6.34%
W S E	NLT 10%	13.41%

Table No. 8: Showing raw drug analysis of twak (*Cinnamomum zeylanica*)

Test	Specification	Result
Appearance	Dry bark	Dry bark
Colour	Brown colour	Brown colour
Odour	Fragrant	Fragrant
Taste	Sweet aromatic	Sweet aromatic
Foreign matter	NMT 2%	NIL
Moisture content	NMT 5%	3.4%
Ash	NMT 3%	2.35%
A I A	NMT 2%	0.51%
A S E	NLT 2%	5.84%
W S E	NLT 3%	6.42%
Volatile oil	NLT 1%	1.1%

Table No. 9: Showing analysis of go-ghrit

Test	Specification	Result
Appearance	Oily or semisolid liquid	Semisolid thick
Colour	White to light yellow	Light yellow
Odour	Rich and characteristic	Characteristic pleasant
Taste	Pleasant	Pleasant
Specific gravity	1.01995 at 25°	1.01995
Reichert mrissel value	24-28	26
Moisture	NMT 0.5%	0.32%
Saponification value	NMT 225	219
Iodine value	NMT 35	31
Unsaponifiable matter	NMT 1.5%	1.30%

Preparation of Darvyadi ghr̥it**Procedure****1. Preparation darvyadi kashay⁴**

Raw ingredients were collected. 250Gm of coarse powder of above mentioned raw drugs were taken in stainless steel vessel along with 4L of water then reduced to 1/4th i. e 1L.

2. Preparation of darvyadi ghr̥it

Above mentioned raw materials were pounded properly to form *kalka*. *Goghr̥it* is taken and heated to melt. Then the prepared *kashay* is added to it along with *darvyadi kalka* in certain interval. These were subjected to *mandagni* (low flame) till the *Sneha siddhi lakshan* appeared.

OBSERVATIONS:

1. During preparation it becomes sludge like.
2. After continuous stirring *ghr̥it* starts to separate from *kalka*.
3. Light green coloured *darvyadi ghr̥it* was obtained.
4. The *kalka* was looking smooth dense mass accumulated in forms of bolus separated from layers of *ghr̥it*.

5. When rolled between two fingers the *kalka* becomes *varti*(wick) on sprinkling the *kalka* on fire the sound observed. Characteristic colour, odour, smell and taste were obtained.

RESULTS:

Go-ghrita was taken 250ml and final product obtained was- 200ml.

Analytical test of *Darvyadi ghr̥it* was done and result are given in following table.

Analytical study:

To assess the quality of *Darvyadi ghr̥it* prepared by using *sushrut uttartaṅtra* reference. This prepared *ghr̥it* was subjected to both classical and modern parameters.

For appearance⁵ 1gm of prepared *Darvyadi ghr̥it* was taken into watch glass and placed to watch through naked eye to observe the colour into white light.

For odour-2gm sample was smelled for odour.

For taste-pinch of subject formulation is taken and its taste was estimated on taste buds of tongue.

For touch-2gm of sample was taken and rubbed against thumb, index finger and middle finger gently.

Table No. 10: Shows the Analytical report of Darvyadi ghr̥it

Test	Report
Appearance	SEMISOLID THICK
Colour	GREEN
Taste	PLEASANT
Odour	CHARACTERISTIC PLEASANT
Specific gravity	0. 9158
Moisture	0. 22%
Saponification value	225
Iodine value	37. 5
Unsaponifiable matter	1. 4%

Specific gravity⁶

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

Specific gravity of ghee = Wt. of Ghee in gms /Wt. of equal Vol. of distilled water in gms

specific gravity of *darvyadi ghr̥it* is 0. 9158

Iodine value⁷

The sample was accurately weight 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 iodine and flask was kept in a dark place at a temperature of about 17^o C for 30min. 15ml of potassium iodine and 100ml of water was added and shaken well. This was titrated with 0. 1N sodium thiosulphate, starch was used as indicator. The experiment was repeated with the same quantities of reagents in the same manner omitting the substances. The number of ml of 0. 1N sodium thiosulphate required was noted. The experiment was repeated twice to get concordant values.

Iodine value of *darvyadi ghr̥it* is 37. 5.

Saponification value⁸

1gm of each of the sample was taken in beaker and dissolved in 3ml of ethanol. Quantitatively the

contents of the beaker were transferred by washing successively three times with 7ml solvent. A 25ml of 0.5ml alcoholic KOH was also added mixed well and attached to reflux condenser. Other reflux condenser get was also used for the blank prepared as above is which all the reagent were added except for fatty material. These flask were placed in a boiling water bath for 30min. Afterwords these were cooled down at room temperature and phenolphthalein indicator was added. The contents of the flask were titrated with 0.5N HCL. The endpoint sample and the blank and test readings provided the number of mililiters of 0.5N KOH requires to saponify the fatty material. The

weight of potassium hydroxide (Mg) consumed by 1g of fatty sample indicated the saponification value of the sample. The saponification value of *darvyadi ghrīt* is 225.

Classical Parameters:

The ancient parameters like *varna*, *gandha* etc were carried out for *Darvyadi ghrīt* in *Rasashastra* and *Bhaishyaja Kalpana* department of APM'S Ayurved mahavidyalaya sion, Mumbai

Organoleptic characters of *Darvyadi ghrīt*

Table No. 11: Showing organoleptic characters by classical method

Parameters	<i>Darvyadi ghrīt</i>
<i>Shabda</i>	Nil
<i>Sparsa</i>	<i>Snigdha</i>
<i>Rupa</i>	Light greenish in colour
<i>Rasa</i>	<i>Kashay</i>
<i>Gandha</i>	Characteristic

DISCUSSION:

*Snehakalpana*⁹ is very important *kalpana* mentioned detail in *sharangdhar Samhita*. As per *acharya sthavar* and *jangam* are two important *Sneha yoni* i. e. origin of *Sneha*.

Ghrīt, *taila*, *vasa*, *majja* are four important *Sneha dravya*, But among all this four *Ghrīt* and *Til taila* is most likely used as a *Sneha* base in various medicated ghee and oil preparations. *Ghrīt* is an excellent among all because it incorporates as well as it has power of assimilation when other substance added to it, Also it retains its own quality. *Snehakalpana* is used to extract the fat soluble active principle or constituents from the raw material, Thereby increases the bioavailability of the drug. *Snehakalpana* used as a internally as well as externally. Internally it is used in various diseases i. e. *Ashmari* (kidney stones), *Bhagna* (fracture)¹⁰ etc and externally it is used in *vrana ropan* (wound healing) as *ghrīt* itself is a best ointment. While preparation of *Sneha* it should be subjected to *madhyamagni* (medium flame). During *snehapaka vidhi* continuously stir the contents carefully with the help of *darvi* to ensure the *kalka* does not stick to bottom resulting in carbonization. The most common *siddhi lakshan*¹¹ are complete stoppage of bubbling sound, Disappearance of foam in *ghrīt*, ability of *kalka* to get rolled into wick and doesn't creat crackling sound when introduced in fire, Appearance of desired colour, smell, taste etc. In *snehakalpana* duration of *snehapaka* depends upon which media is used. When *sneha* prepared with the help of milk then it should be completed in two nights. *Swarasa* is used then it extended for two nights. When *takra* (buttermilk), *kanji* etc are used the process should extend for five nights. When process incorporates *moola* and *lata* (i. e. roots and creepers) the process has to be extended for twelve days, Apart from that cereals and *mamsarasa* (meat soup) are used then then the process is

completed within a day. *Acharya sharandhar* mentioned that shelf life of *Sneha* is four to sixteen months and further stated the dose as a one pala. *Bhaishyaja ratanavali*¹² considered one pala is *uttam matra*, three tola as *madhyam matra* and two tola as a *heena matra*. Sample is prepared as per the standard operating procedure giving important to the process validation. Changes occurs in each and every step, *siddhi lakshan*, final yield product, characteristics are observed carefully, recorded and analysed.

CONCLUSION:

Detailed description of *snehakalpana* along with the classification with respect to nature of media, stages of *snehapaka* and types of utility are explained. *Sneha murchana* which is not done as a pre-requisite before all *snehapaka* is performed as this procedure might allow the phyto constituent present in the ingredient of *Sneha murchana* to be transformed to final product. *Darvyadi ghrīt* is first mentioned in Ayurvedic literature along with other ingredients to manage all kinds of chronic diarrhoea cases. *Darvyadi ghrīt* is an unctuous, viscous, soft mass of light green in colour, slightly astringent in taste and characteristic odour. As the formulation is still in text only it needs pre-clinical and clinical studies implement it as a potent formulation and magnificent remedy for management of chronic diarrhoea conditions.

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