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PHARMACEUTICAL ANALYTICAL STUDY OF KSHEERA SHATPALA GRITHA

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ABSTARCT

Sneha (unctous material) are four types *ghrita* (ghee), *taila* (oil), *vasa* (fat), *majja* (bone marrow). The main aim of sneha kalpana is to extract the lipid soluble active principles from the drug. *Ksheera shatpala ghrita* is a formulation which has six ingredients (*pippali, pippali mula, chavya, chitraka, nagara, yavakshara*) for *kalka* (paste) of one *pala* each, ghee as *sneha dravya* and milk as *drava dravya* (liquid) having *dipana-pachana* property. It is indicated in *annavaha srotovikara* like *gulma*, *pliha, grahani, mandagni*.

Keywords: *ghrita, panchakola, sneha, ksheera, pala*

INTRODUCTION:

Sneha kalpana is the method of processing the drug with *kalka dravya* (paste), *sneha dravya* (unctous) and *drava dravya* (liquid) in 1:4:16 ratio respectively **[1]**. *Sneha* are four types viz., *ghrita, taila, vasa, majja*. Among them *ghrita* is considered to be the best because of its *samskara anuvartana guna* **[2]**. (It readily incorporates the properties of the drugs which come in contact with the *ghrita* without leaving its natural qualities **[3]**. The main aim of *sneha kalpana* is to extract the lipid soluble active principles from the drug **[4]**. It improves intellect, memory, digestion power, improves eye-sight, energy, complexion and voice. It helps to mitigate *vata-pitta dosha*, fever. It is cold in potency, has *vahaysthapana* (longevity), wound healing properties. It also helps to treat intoxication, epilepsy, syncopal attack,

diseases related to head, eyes, ears etc. *Ghrita* prepared from cow's milk is the best compared to other animal's milk **[5]**. Depending on *kala samskara ghrita* can be classified into *Purana ghrita* (ghrita which is stored properly from 1 to 10 years) *Prapurana ghrita (ghrita* which is stored properly from 10 to 100 years) *Kumbha ghrita* (ghrita which is stored properly from 100 to 111 years) *Maha ghrita* (ghrita which is stored properly for more than 111 years **[6]**.

Ksheera shatpala ghrita is a formulation which has six ingredients namely *pippali, pippali mula, chavya, chitraka, nagara* and *yavakshara* **[7]**. It has *dipana* (appetizer), *pachana* (digestant) properties and is indicated in GI disorders. As this *sneha kalpana* includes 6 *kalka dravya*, *ksheera* as *drava dravya* it is named as *ksheera shatpala ghrita* in Bhaishajya ratnavali. In Bharata Bhaishajya Ratnakara it is mentioned as *Shadanga ghritam* **[8]**. In sharngadhara Samhita *ksheerashatpala ghrita* contains *saindhava lavana* (rock salt) as one of the *kalka dravya* instead of *yavakshara*. It is termed as *panchakola ghrita* by some authors because the *kalka dravya* are mainly *panchakola* **[9]** also Vrunda Madhava, Vangasena, Gada nigraha, Sushruta mentioned as *shatpala ghrita* which contains *saindhava lavana* instead of *yavakshara* **[10]**.

The main objective of this study is to analyse the KSG by checking the parameters according to laboratory guide for the analysis of Ayurveda and siddha formulations.

MATERIALS & METHODS:

Ghrita murchana **[11]** (processing of ghee) was done by boiling raw *ghrita* with some herbs and required quantity of liquid in order to remove the *amadosha* of raw *ghrita* and to increase the potential merits. One *prastha* (768gm) *ghrita* was taken in a suitable pan heated over mild fire. Added mentioned quantity of water and heating was continued. Meanwhile, *kalka* was prepared by general method of *kalka* preparation from the drugs mentioned under **Table 1** by adding 80ml of *nimbu swarasa*(lemon juice). This *kalka* was added to the mixture of ghee and water further boiling was continued till *sneha siddi lakshana* **[12]** appears. After that, *murchita ghrita* was filtered and stored for further use.

Table: 1: Requirements for *Ghrita murchana*

Ingredients	Botanical name	Part used	Proportion
Haritaki	*Terminalia chebula*	Fruit	48 gm
Vibhitaki	*Terminalia belerica*	Fruit	48 gm
Amalaki	*Emblica oficinalis*	Fruit	48 gm
Mustha	*Cyperus rotundus*	Rhizome	48 gm
Haridra	*Curcuma longa*	Rhizome	48 gm
Nimbu rasa	*Citrus limon*	Juice	Q.S
Ghee	-	-	768gm
Water	-	-	1536ml

Murchita ghrita was melted in a suitable wide mouthed vessel over mild fire, added four *prastha* (3 lts) of *ksheera* and four *prastha* (3 lts) of water further heating was continued. *Kalka* was prepared by trichurating the powdered ingredients of **Table 2** with quantity sufficient water. The contents were heated over mild fire till *sneha siddhi lakshana* appears. After attaining proper *paka* it was filtered and stored in an air tight container. It can be given in the dose of 5-10 ml with hot water or hot milk as *anupana* (adjuvent) **[7]**.

Table 2: Ingredients for *Kalka*

Ingredients	Botanical name	Part used	Proportion
Pippali	***Piper longum***	**Fruit**	**48 gm**
Pippalimula	***Piper longum***	**Root**	**48 gm**
Chavya	***Piper retrofractum***	**Root**	**48 gm**
Chitraka	***Plumbago zeylanica***	**Root**	**48 gm**
Shunti	***Zingiber officinale***	**Rhizome**	**48 gm**
Yavakshara	-	-	**48 gm**

Analytical Study was done in two ways by assessing Ayurveda parameters and modern parameters.

Ayurveda parameters were assessed by *sneha siddhi lakshana* in which *kalka* attained perfect wick shape when rolled between thumb and index fingers, when small amount of *sneha kalka* was put in to the fire no sound produced, foams were disappeared when the process was completed also, *kalka* gets separated from *Sneha* in the last.

Modern Parameters were assessed according to the guidelines given in laboratory guide for the analysis of Ayurveda and siddha formulations.

Refractive index **[13]** was analyzed by Placing a drop of KSG on the lower part of the prism of Abbe's refractometer and closed the refractometer. Observation done through eyepiece and dispersion correction compensator knob was turned until the colored indistinct boundary between the light and dark field becomes a sharp line. Adjust the knurled knob until the sharp line exactly intersect the midpoint of the cross wires in the image. Read the refractive index from the magnifier in the pointer and record the reading. Adjustment was done with artificial light to get the refractive index of the *ksheera shatpala ghrita*.

To assess the Relative Viscosity **[14]** Ostwald method was adopted, a definite volume of KSG was melted and poured into the larger bulb of viscometer. KSG was sucked up near the top of the smaller bulb till the upper mark. Then it was released to flow back into the larger bulb, the time to flow from upper mark to lower mark was noted as t_1 with stop watch. The procedure was repeated with same volume of distilled water after cleaning the apparatus and the time noted as t_2. The density of the ksheera shatpala ghrita (d_1) and water (d_2) was

determined with the help of pyknometer. The relative viscosity co-efficient calculation was done by using $n_1 = (d_1t_1/d_2t_2)$ X n_2. (n_2= viscosity of water 0.0101).

Weight of the empty pyknometer was noted as W_1. Filled the pyknometer with distilled water record the weight as W_2. Again, the pycnometer filled with KSG and record the weight as W_3. Specific gravity **[15]** was Calculated with the formula SG= (W_2-W_1/W_3-W_1).

Ph of KSG was recorded using pH meter. It indicates the acidic/ alkaline nature of KSG. pH meter was standardized by dissolving tablets of different pH in 100ml of distilled water to prepare solutions of different pH 4, 7 & 9 respectively. Switched-on the instrument left it for some time. Buffer solution was taken in a beaker and electrode was dipped in it. Same procedure was Carried-out for another buffer solution also, after washing the electrode with distilled water. KSG was taken in another beaker and dipped the electrode in it noted the value of pH **[16]**.

T.S.S was analysed using hand refractometer to know the total suspended solid particles in KSG. Few drops of distilled water were placed over prism surface, cover was closed, pressed gently that removed the bubbles and disperse the distilled water over the entire surface. The refractometer was held up to natural light to see the contrast line through eyepiece (a distinct separation between blue and white section). Contrast line was adjusted to zero by turning the screw on the top of the refractometer. So that refractometer was calibrated to zero with distilled water. It was then dried with cotton, few drops of KSG were placed on the prism and cover was closed the entire surface filled and void of bubbles. Through eyepiece the reading was recorded **[17]**.

RESULTS AND DISCUSSION:

The organoleptic test is a technique of qualitative evaluation based on the study of sensory profiles of the drug **[18]**. Both organoleptic and physico-chemical analysis of *ghrita, murchita ghrita* and *KSG* results were tabulated in **Table 3 and 4** respectively.

Table 3: Organoleptic Charecters of *Ghrita, Murchita Ghrita* and *KSG*

Tests	*Ghrita*	*Murchita ghrita*	*KSG*
Color	Light yellow	Dark yellow	Dark yellow
Odour	Characteristic odour of ghee	Aromatic odour	Aromatic odour
Consistency	Liquid	Viscous	Viscous
Taste	Characteristic taste of ghee	Astringent	Pungent
Touch	Cold	Cold	Cold

Table 4: Analytical Parameters of *Ghrita*, *Murchita Ghrita* AND *KSG*

Tests	*Ghrita*	*Murchita ghrita*	*KSG*
Refractive index	1.467	1.467	1.467
Relative Viscosity (29°C)	62.47	59.13	58.729
Specific gravity (25°C)	O.911	0.927	0.929
pH	4	4	11
Total Suspended Solids	74%	74.5%	75%

DISCUSSION:

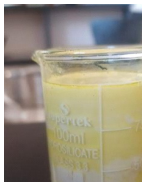
Among of huge treasures of drugs mentioned in Ayurveda many of the drugs are still to be focused. As this *sneha kalpana* includes 6 *kalka dravya, ksheera* as *drava dravya* it is named as *Ksheera Shatpala Ghrita*. Also termed as *panchakola ghrita* because the *kalka dravya* are mainly *panchakola*. Also mentioned as *shadanga ghrita* as it has 6 ingredients of *kalka*. In this work, Total 6 references are available on this formulation with either *yavakshara* or *saindhava lavana*. Based on the pharmacological properties of ingredients, KSG has *dipana, pachana* properties it is useful in GI disorders.

Murchana converts light yellow ghee into dark yellow because of adding *haridra* (*Curcuma longa),* into it, astringent taste of *murchita ghrita* is due to *musta (Cyperus rotundus)*, *haridra* (*Curcuma longa)*, *haritaki (Terminalia chebula), vibhitaki (Terminalia belerica),* pungent taste of KSG is due to *panchakola* drugs, Agni *nikshiptata* is because of loss of moisture.

While checking the modern parameters temperature has to be maintained so that *ghrita* will be in the melted state only. There is no change in the refractive index. Viscosity is due to incorporation of bio constituents into *ghrita* from the drugs used for preparation **[16]**. Specific gravity is more compared to *ghrita* and *murchita ghrita*. There is increase in specific gravity and TSS after *murchana* and in KSG indicates addition of some bio constituents from the drugs. pH indicates acidic or alkaline nature and increase in the pH of KSG compared to *ghrita* and *murchita ghrita* is due to presence of *yavakshara*.

Pippali **Pippali mula** **Chavya**

Chitraka **Shunti** **yavakshara**



Ksheera

Ghrita

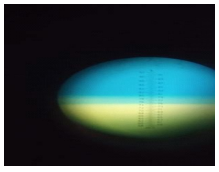
Adding ksheera

Vartivat sneha kalkah

Kalka gets separated

Ksheera shatpala *ghrita*

Refractive index



TSS analysis

PH analysis

Relative viscosity

Figure

CONCLUSION:

To conclude, *ksheera shatpala ghrita* is a formulation having 6 *kalka dravya* including *yavakshara* and *ksheera* as *drava dravya*. Totally 6 references are available on this formulation with either *yavakshara* or *saindhava lavana* **[19]**. By assessing the *rasa panchaka* of ingredients we can consider it has *dipana-pachana* property. Indicated in *annavaha srotovikara* like *gulma*, *pliha, grahani, mandagni*.

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