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A COMPARATIVE PHARMACEUTICO ANALYTICAL STUDY OF *YASTIMADHU KSHEERAPAKOTTHA GHRITHA* AND *YASTIMADHU GHRITHA*

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ABSTRACT

Drug research is an important part of pharmaceutical field especially in Ayurveda pharmaceutics to revalidate and establish various formulations. Ghritha kalpana has got prime importance due to a special property of Ghritha i.e Samskarasyanuvartana. Ksheera ghritha and Ghritha are explained with different properties in Ayurveda classics. Present study is to compare between Yastimadhu Ksheera ghritha and classical Yastimadhu ghritha by organoleptic and analytical parameters. Ksheera ghritha procedure may bypass the long procedure , maximise the percentage of extract in Ghritha. Reference of Ksheera ghritha is available in various classical texts like Sushruta samhitha1 etc. Ksheera ghritha said to have properties like Netrya , Sangrahi , Rakthapitta hara etc.

Ksheera ghritha of Yastimadhu prepared by preparing Ksheerapaka taken as G1 and Yastimadhu Ghritha prepared by normal classical way taken as G2. Analytical study for standardization of both samples were carried out on the basis of classically illustrated organoleptic tests and modern parameters of physico-chemical properties like LOD, Refractive index , Saponification value etc., and TLC done for qualitative analysis. By this study the major difference between Ksheera ghritha and Ghritha are established giving further scope for clinical research to establish efficacy of same.

KEY WORDS : *Ayurveda, Ghritha, Yastimadhu, Ksheerapaka.*

INTRODUCTION

In the vast ocean of knowledge of *Ayurveda* many formulations and pharmaceutical procedures are still unexplored or not in use. One among them is *Ksheera Ghritha*[1]. *Ghritha* is told to be *sarva snehottama* in *Charaka samhitha* as it is having the unique quality of *Samskarasyanuvartana*[2]. There are two methods to obtain *Ghritha*, by *Takrodbhava navaneetha* or by *Ksheerodbhava navaneetha.* References can be sought from *Sushrutha samhitha.* In contemporary dairy industry also we get the description about Ghee and Desi Ghee[3]. Both have different method of preparation. Desi ghee go in hand with *Takrodbhava* i.e. butter is separated from curds by churning separating buttermilk, whereas Ghee can be correlated to *Ksheerodbhava ghritha* i.e. derived from cream of milk obtained by churning/centrifuging milk.

Here an attempt is done to compare between *Ghritha* and *Ksheera ghritha* by using *Yastimadhu*[4] to compare by which method maximum extraction happens.

MATERIALS AND METHODS

Pharmaceutical study :

A.Yastimadhu Ksheera ghritha.

B.Yastimadhu ghritha.

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Analytical study : A.Yastimadhu Ksheera ghritha.
B.Yastimadhu ghritha.

PHARMACEUTICAL STUDY

Preparation of *Yastimadhu Ksheera ghritha*:
Yastimadhu sample procured from KVG Ayurveda Pharma & Research Centre, Sullia, *Ksheera paka* is prepared as per *Sharngadhara samhitha* reference and kept overnight and next day it is churned to get cream. It is then washed thoroughly and weighed. It is then heated in a pan in *mandagni* till clear *Ghritha* devoid of water content is obtained with the characteristic odour of ghee and residue at bottom. It is then measured and preserved in airtight container with proper labelling.

Preparation of *Yastimadhu ghritha* :
Yatimadhu ghritha is prepared as per classical *Sneha kalpana vidhi* i.e 1 part of *Yastimadhu kalka*, 4 parts of *gou ghritha and 16 parts of Yastimadhu Kashaya,* heated till *Sneha siddhi lakshanas* then measured and stored properly.

Observations

Yastimadhu Ksheera ghritha	*Yatimadhu ghritha*
• 2 Litre *Yastimadhu Ksheera paka* kept overnight formed a layer of cream next day. • Churning process took around 10 minutes. • 130gms of cream obtained having dull brownish colour, odour of *Yastimadhu,* tasted sweet, unctuous on touch. • Around 2.5 minutes taken to convert to ghee on heating in a low flame.	• During preparation after adding *Kalka* and *Kwatha* it absorbed all ghee and formed like a mass. • After around 2 hours it started to separate from *kalka* with golden yellow colour. • *Sneha sidhha lakshanas** attained and hissing sound stopped. • Total time taken 5 hours.

ANALYTICAL STUDY

Analysis of organoleptic characters[5]:

- Description / Appearance / Colour :1gm. of both the samples taken in a watch glass and examined through naked eye.
- Odour : 2gms. of both samples smelled separately for odour.
- Taste : A pinch of each sample toasted to estimate the taste of *ghritha*.
- Texture : 2gms of each sample taken and rubbed against thumb, index finger gently.

Analysis of Physico-chemical parameters:

Loss on Drying (LOD)[6]:

This parameter determines the amount of volatile matter (i.e water drying off from the drug). For substances appearing to contain water as the only volatile constituent.

Refractive Index[7]

It is the ratio of velocity of light in air divided by velocity of light in substance. It was determined by Abbe refractometer. For this, the sample (G1,G2)of ghee was dropped over the prism after complete cleaning of the prism. The refractive index of the sample G1 and G2 noted.

Iodine Value[8]

The iodine value of the substance is the weight of iodine absorbed by 100 parts of weight of substance when determined by Pyridine Bromide method.

Saponification Value[9]

The Saponification value is the number of mg of KOH required to neutralize the free fatty acids, resulting in the form of complete hydrolysis of 1 gm of fat. About 2 gm of the sample taken in a 250 ml flask , add 25 ml of Alcoholic KOH solution. Attached to a reflux condenser and heated in a water bath for about an hour. After cooling 1ml of phenolphthalein solution as a indicator and titrated with 0.5N HCL and number of ml of HCL required noted. Procedure repeated for a blank and value noted and finally calculated.

Acid value[10]

The acid value is the number of mg of KOH required to neutralize the free acids in 1 gm of the substance. Note the number of ml of alkali required, repeat the same experiment for blank and note the reading and calculate.

Ester value[11]

The ester value is the number of milligrams of KOH required to saponify the esters present in 1gm of sample. Ester value = Saponification value – Acid value.

Qualitative analysis

Thin layer chromatography[12] is a technique in which a solute undergoes distribution between two phases, stationary phase acting through adsorption and a

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mobile phase in the form of a liquid. Both the samples of *ghrithas* are extracted in ethanol by soaking for 18 hours, then filtered in filter paper. 6 micro litre of sample applied to TLC plate and dried. Mobile phase is prepared in the ratio of 6:3:1 (Toluene:Ethyleacetate : Formic acid). The TLC plate was kept dipped in the mobile phase. Then it is dried and visualised under ultra violet rays.

RESULTS

During preparation of *Yastimadhu Ksheera ghritha* and *Yastimadhu ghritha*, the observations are noted at each stage and the results are shown in the tables. The refractive index of G1 is slightly greater than G2; also, the bricks value of G1 stands greater than G2 signifies that particles distribution is better in G1 than G2. Saponification value, Iodine value, found to be almost similar. The acid value of G2 is slightly greater than G1. Keri's test (Rancidity) passed by both the samples. TLC has shown significant difference between G1 and G2. The band obtained inn G1 is better than G2 when compared with the sample. It signifies that maximum extraction has happened by G1 methods than G2 method.

Table 1: Organoleptic characters.

Organoleptic characters	G1	G2
Description	A low melting medicated fat.	A low melting medicated fat.
Appearance	Soft viscous mass	Soft viscous mass
Colour	Light yellow	Dark Yellow
Odour	Pleasant sweet odour	Characteristic Ghritha odour
Touch	Unctuous , Clear	Unctuous , Small particles could be felt
Taste	Sweet	Sweet

Table 2: Physicochemical Parameters.

Physico-chemical parameter	G1	G2
Loss On Drying (LOD)	0.9%	1%
Refractive index	1.46	1.45
Bricks	68	66.5
Iodine value	42.8	40
Saponification value	226	229
Acid value	1.98	2.01
Ester value	224.02	226.99

DISCUSSION

Reference of *Ksheerottha navaneetha* and *Ksheera ghritha* are obtained in *Suhrutha samhitha* and *Astanga Hridaya*. *Dalhancharya* commentary says the *navaneetha* derived form *Ksheera* is used to prepare *Ksheera ghrita.* The properties of *ksheerotha navaneetha* as follows best *sneha*, sweet, very cold in potency, good for eyes, cures epistaxis and said to good for skin[13]. Properties of *Ksheera ghritha* are good *sangrahi* due to its *prabhava*, good for eyes and cures fainting and seizures[14]. By considering above references the *Yastimadhu ksheerotha navaneeta* is heated to get *Yastimadhu Ksheera ghritha*, another sample of classical Yastimadhu *Ghritha* prepared and analysed with different parameters mainly to see the property of *Samskarasyanuvartana* could be seen. By TLC, it is substantiated that *Ksheera ghritha* has more capacity to extract the active principles than the normal *ghritha*. This process potentially can bypasses the long procedure of *sneha kalpana* considering the indication etc. saving time, drug etc. giving maximum availability of drug for absorption. Thus, this study gave a platform for further research and clinical study for getting more accurate idea about its efficacy.

CONCLUSION

Ksheera ghritha reference first mentioned in *Suhrutha samhitha* and then inn *Astanga hridaya* etc. By this study we come to know that both are having almost similar organoleptic character and analytical character, but by TLC it showed significant extraction happened by *Ksheera ghritha*. Thus qualitatively *Ksheera ghritha* found to better than classical *ghritha.* Further study has to happen to establish the clinical efficacy of both ghritha.

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