PRELIMINARY ANALYTICAL STUDY OF SAINDHAVADYA GHRUTA

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ABSTRACT

Ghruta is considered best among the Snehas. Its usage is being highlighted by our Acharyas in the disorders of brain like Unmada, Apasmara etc. This study focuses on one such preparation Saindhayadya ghruta mentioned in Yogaratnaka Apasmara chikitsa. Literary review done through various sources like books, journals and internet revealed that, no studies have been carried out on this formulation yet. Hence an attempt was made to study Saindhayadya ghruta through qualitative and quantitative analysis of Physico-chemical parameters and to develop fingerprints of High Performance Thin Layer chromatography study (HPTLC). HPTLC densitometric scan of chloroform extract of unsaponifiable matter of Saindhavadya Ghruta showed 9 and 6 spots at 254nm and 366nm respectively. To interpret the results, there are no previous standard markers established for Saindhavadya ghruta. This analytical profile may help in the identification of Saindhavadya ghruta in future and to maintain the standard quality of the formulation.

KEYWORDS: Saindhayadya ghruta, Apasmara, Physico-chemical, HPTLC.

INTRODUCTION

Sneha kalpana is one of the important dosage forms in Ayurveda which is emphasized in vast number of conditions both for its internal and external application. Ghruta is considered best among the snehas.[1] Because of its lipophilic action it crosses the blood brain barrier delivering the active principles of the ingredients at the specific sites of their action.[2] The more lipophilic the drug is, the more likely it is to cross the blood brain barrier. [3] Usage of Ghruta is being highlighted by our Acharyas in the disorders of brain like Unmada, Apasmara etc. In spite of continuous drug research, there is a lack of safe and effective anti convulsants to treat the condition of Apasmara in modern science. Even the long term usage of these drugs poses serious side effects to the individual.

Various Ghruta based formulations have been mentioned in Ayurveda classics which still remain unexplored. These have to be identified and studied with the present day analytical aids and standardised for the clinical use. Such a need prompted the study of Saindhavadhya ghruta, a formulation told in Apasmara Chikitsa. Here an attempt has been made to study Saindhavadhya ghruta analytically and to develop fingerprints of High Performance Thin Layer Chromatography study (HPTLC).

MATERIALS AND METHODS

Collection of raw drugs

Go Ghruta was obtained from genuine source and stored for a period of one year to make it Purana (old). Gomutra was collected from genuine sources in local areas of Moodbidri. Certified raw drugs were collected form ALVA Pharmacy, Mijar, Karnataka. All these raw drugs were identified as genuine samples by the department of Dravya Guna, Alva’s Ayurveda medical college, Moodbidri, Karnataka.
Pharmaceutical study

_Saindhavadhya ghruta_ was prepared in the Rasashastra and Bhaishajya Kalpana lab of Alva’s Ayurveda medical college, Moodbidri, Karnataka.

Pharmaceutical study of _Saindhavadya ghruta_ was divided into 2 parts, namely

1) Preparation of _Murcchita ghruta_
2) Preparation of _Saindhavadya ghruta_ from _Murcchita ghruta_

1) _Ghruta Murcchana_


Ingredients:

**Kalka dravya:** Amalaki, Hareetaki, Vibheetaki, Musta, Haridra – 30g each

**Sneha dravya:** Purana goghruta -700g

**Drava dravya:** Jala – 2800ml

Method of preparation

_Ghruta paka_ was done according to the classical procedure told by Acharya Sharangadhara.[5]

2) Preparation of _Saindhavadya Ghruta_ from _Murcchita Ghruta_


**Kalka dravya:** Pippali, Shodita hingu and Saindhava lavana – 50g each

**Sneha dravya:** Murcchita goghruta – 600g

**Drava dravya:** Gomutra – 2400ml

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Drug Name</th>
<th>Botanical Name</th>
<th>Family</th>
<th>Part Used</th>
<th>Quantity Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Hingu [8]</td>
<td>Ferula narthex Bioss</td>
<td>Umbelliferae</td>
<td>Resin</td>
<td>50g</td>
</tr>
<tr>
<td>3.</td>
<td>Pippali [9]</td>
<td>Piper longum Linn</td>
<td>Piperaceae</td>
<td>Fruit</td>
<td>50g</td>
</tr>
<tr>
<td>4.</td>
<td>Moorchita Goghruta</td>
<td></td>
<td></td>
<td></td>
<td>600g</td>
</tr>
<tr>
<td>5.</td>
<td>Gomutra</td>
<td></td>
<td></td>
<td></td>
<td>2400ml</td>
</tr>
</tbody>
</table>

Method of preparation

Initially _Shodana_ of _Hingu_ was done. _Hingu_ was broken into small pieces and taken in a vessel. _Go Ghruta_ was poured into it and fried well till it became brown and crispy. After cooling it was powdered. _Pippali_ was made into fine paste with water and powdered. _Hingu_ and _Saindhava lavana_ were mixed with it and made _Kalka_. _Murcchita Goghruta_ was taken in a wide mouthed vessel and heated to luke warm state and _kalka_ was added slowly to it. Later _Gomutra_ was added and boiling was continued for some time and it was kept as it is overnight. _Paka_ was completed on the 5th day as per the reference of _Vaidyaka Paribhasha Pradeepa_.[10] The stages of preparation of _Saindhavadya ghruta_ are shown in the figures 1 to 6.

Precautions taken during the preparation

Continuous stirring of the _Ghruta_ was done as there was continuous frothing during the preparation due to the presence of _Gomutra_ and _Lavana_. To avoid spillage due to frothing wide mouthed sufficiently big vessel was taken for the preparation.

Analytical study

Analytical study in the present study deals with the physical and chemical evaluation of the formulation. The tests were carried out at SDMCA analytical lab, Udyavara, Udupi, Karnataka.

Organoleptical parameters, Physico-chemical analysis were done as per the standard pharmaceutical laboratory process given in Appendix 3 (Physical test determination) of the Ayurvedic Pharmacopeia of India.[11] Various organoleptical parameters of the formulation, such as colour, odour and taste of the _Ghruta_ were recorded.

HPTLC

Unsaponifiable matter of _Saindhavadya ghruta_ was dissolved in 5 ml of chloroform. 5µl of the above sample was applied on a precoated silica gel F254 on aluminum plates to a band width of 4 mm using Linomat 5 TLC applicator. The plate was developed in Toluene – Ethyl acetate (8: 1) and the developed plates were visualized under 254 and 366 nm and after derivatisation in vanillin-sulphuric acid spray reagent and scanned under UV 254 and 366 nm.
Rf, colour of the spots and densitometric scan were recorded.

Results

The organoleptic characters of *Saindhavadya ghruta* - the colour was light brown, after cooling it attained slight yellow colour. It had a strong odour of *Gomutra* and *Hingu*. Taste was astringent and salty. It was unctuous, semi-solid and granular in consistency. The results of physico-chemical parameters are shown in the table 2.

Table 2: showing the analytical results of physico chemical parameters of *Saindhavadya ghrutha*

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss on drying</td>
<td>0.18%</td>
</tr>
<tr>
<td>Refractive index</td>
<td>1.45</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>0.92</td>
</tr>
<tr>
<td>Saponification value</td>
<td>195.27 mg/ml</td>
</tr>
<tr>
<td>Iodine value</td>
<td>5.14 g/ml</td>
</tr>
<tr>
<td>Acid value</td>
<td>0.27g / ml</td>
</tr>
<tr>
<td>Ester value</td>
<td>194.99 g / ml</td>
</tr>
<tr>
<td>Unsaponifiable matter</td>
<td>0.60 g</td>
</tr>
<tr>
<td>Total fatty matter</td>
<td>99.39 m Eq/L</td>
</tr>
<tr>
<td>Free fatty acid</td>
<td>1.49 mEq/L</td>
</tr>
<tr>
<td>Viscosity</td>
<td>40 min / 50ml</td>
</tr>
</tbody>
</table>

HPTLC analysis of *Saindhavadya ghruta*

TLC Photodocumentation of chloroform extract of unsaponifiable matter of Saindhavadya ghruta is depicted in figure 7. HPTLC densitometric scan of chloroform extract of unsaponifiable matter of Saindhvadhya ghruta showed 9 spots and 6 spots at 254 nm and 366nm respectively. The Rf value of chloroform extract of unsaponifiable matter of Saindhvadya ghruta is shown in table 3 and the graphs of peaks at 254nm and 366nm are depicted in figures 8 and 9.

Table 3: showing the Rf value of chloroform extract of unsaponifiable matter at 254nm and 366nm

<table>
<thead>
<tr>
<th>AT UV 254 NM</th>
<th>AT UV 366 NM</th>
<th>POST - DERIVATISATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.12 D Green</td>
<td>0.12 F Blue</td>
<td>0.12 Pink</td>
</tr>
<tr>
<td>0.15 D Green</td>
<td>0.15 F Blue</td>
<td>0.15 Pink</td>
</tr>
<tr>
<td>0.23 D Green</td>
<td>-</td>
<td>0.23 Blue</td>
</tr>
<tr>
<td>0.29 D Green</td>
<td>0.29 F L Blue</td>
<td>0.29 D Blue</td>
</tr>
<tr>
<td>0.33L Green</td>
<td>0.33 F L Blue</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>0.42 F M Blue</td>
<td>0.42 Violet</td>
</tr>
<tr>
<td>0.46 L Green</td>
<td>-</td>
<td>0.46Blue</td>
</tr>
<tr>
<td>0.48 L Green</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>0.51 F L Blue</td>
<td>0.51 L Pink</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0.55 L Pink</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0.62 L Pink</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0.68 L Blue</td>
</tr>
<tr>
<td>0.76 L Green</td>
<td>0.76 F Blue</td>
<td>0.76 L Pink</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0.87 Blue</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0.97 Blue</td>
</tr>
</tbody>
</table>

D- Dark, L - Light, F- Flourescent

Discussion

As per the reference, *Saindhavadya ghruta* was prepared with 1 part of *Murchitha Go ghruta*, 1/4th part of *Kalka* (*Pippali, Hingu and Saindhava lavana*) and 4 parts of *Gomutra*. Collection of *Gomutra* was difficult as it had to be used in the fresh state. This may pose a problem if the preparation has to be taken for large scale production. At this point, there is a scope for further research by taking *Gomutra arka* instead of *Gomutra* in the preparation of *Saindhavadya ghruta*. *Gomutra arka* may be a better option due to the advantage of storage and easy availability.
in market. But the efficacy of the preparation has to be assessed in comparison with Gomutra when Gomutra arka is used in the preparation.

The colour of the Ghruta was changing gradually after each Paka, which may be due to the chemical changes occurring in the Ghruta because of Gomutra, Lavana etc ingredients. The colour change probably is an indication of solubility of active principles more into Ghruta with the increased contact time.

Pharmacologically, the presentation of the final product may be a problem due to the offensive odour of Gomutra and Hinga. Murcchana was helpful in reducing the odour to an extent but couldn’t mask it completely. Attempts can be made in further studies to make it pharmacologically more presentable by masking its odour by carrying out Gandhapaka/ Patrapaka with Sugandhadravyas like Ela, Lavanga, Usheera etc. drugs.

In analytical study of Saindhavadya ghruta, the loss on drying, iodine value and acid value were less than the plain go Ghruta indicating less chances of early rancidity and prolonged shelf life. The RF values got can be considered as HPTLC fingerprinting for the Saindhavadya ghruta.

CONCLUSION

There are enumerable Yogas mentioned in the classics for the treatment of disorders like Unmada, Apasmara etc. These have to be brought into use after proper preparation and analysis. The data evolved in the present study will be very useful for routine quality control of Saindhavadya ghruta and also to control the batch to batch variation. Further studies should be carried out with huge samples of different batches to standardize the formulation.

REFERENCES


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Available online at : http://ijapr.in
Photographs

**Figure 1:** Hingu shodhana

**Figure 2:** Addition of kalka

**Figure 3:** Addition of gomutra

**Figure 4:** Heating of ghruta

**Figure 5:** Frothing during heating

**PREPARATION OF SAINDHAVADYA GHRUTA**

**Figure 6:** Saindhavadya ghruta

**Figure 7:** TLC Photodocumentation of chloroform extract of unsaponifiable matter of Saindhavadya Ghruta

Solvent system – Toluene : Ethyl acetate (8:1)
Figure 8: HPTLC Densitometric scan of chloroform extract of unsaponifiable matter of Saindhavadya Ghruta at 254 nm

Figure 9. HPTLC Densitometric scan of chloroform extract of unsaponifiable matter of Saindhavadya Ghruta at 366 nm