

Comparative Physico-Chemical Standardization of Kushmanda Ghrita Prepared by Using Murchita and Amurchita Ghrita

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Abstract

Sneha Kalpana is one of the important and highly established kalpanas of Ayurveda. It is the method of preparing a medicine in which the lipid soluble and aqueous soluble active principles of the Aushadhis are incorporated in to Sneha Dravya. Prior to snehapaka vidhi, Sneha is subjected to Murchana process, aiming to eliminate Ama dosha and enhance potency. Addressing the global burden of Apasmara (epilepsy) and the growing acceptance of Ayurveda, cost-effective medicines are crucial. Despite existing studies, ancient texts hold untapped potential, with secondary preparations like Sneha Kalpana offer extended shelf life compared to Panchavidha Kashaya Kalpana. Kushmanda Ghrita is a unique sneha kalpana mentioned in the text of Chakradatta, which is indicated for the management of Apasmara. The ingredients are Kushmanda Swarasa, Yastimadhu and Go-Ghrita. Total six samples were prepared in three batches, three samples prepared by Murchita Ghrita and other three samples with Amurchita Ghrita. All the Ghrita samples were subjected to analysis for physico-chemical parameters, to develop the SOP and to validate Murchana process.

Keywords

Apasmara, Kushmanda Ghrita, Murchana

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1. Introduction

Apasmara is considered as one of the Asthamahagada in Ayurvedic classics referring Tama Pravesha and Bheebatsa cheshta due to the perversion of Smruthi, Buddhi and Satva^[1]. Sneha Kalpana^[2] is one of the important and highly established kalpanas of Ayurveda. It is the method of preparing a medicine in which the lipid soluble and aqueous soluble active principles of the Aushadhis are incorporated in to Sneha Dravya. Sneha Murchana^[3] is a unique pharmaceutical procedure, that precedes the Sneha paka and it involves a specific procedure. It is applicable for both Taila and Ghrita. It is regarded as one of the Samskaras of Sneha (transformative processes for sneha). By this Samskara, Sneha acquires specific pharmaceutical as well as therapeutic attributes. Kushmanda Ghrita^[4] is a classically prescribed for Apasmara in the text of Chakradatta. Lipid-based medications, due to their lipophilic nature, have an improved ability to cross the blood-brain barrier, facilitating their use in treating neurological disorders by reaching the brain effectively. This study aimed to carry out to compare the analytical parameters of Kushmanda Ghrita by standardizing it using three samples prepared using Murchita and Amurchita Ghrita.

Table 1. Ingredients of Kushmanda Gritha as per Chakradatta Text

| Sl.No. | Dravyas Ingredients | Latin Name | Family Name | Part Used | Swaroopa Process | Anupata Quantity |
|--------|---------------------|---------------------------|-----------------|-----------|------------------|------------------------|
| 1 | Yastimadhu | <i>Glycyrrhiza glabra</i> | <i>Fabaceae</i> | Roots | Kalka | 1/4 th Part |
| 2 | Go ghrita | - | - | - | Gritha | 1 Part |
| 3 | Kushmanda | Benincasa hispida | Cucurbitaceae | Fruit | Swarasa | 18 Part |

Table 2. Ingredients for Ghrita Murchana

| Sl.No. | Dravyas Ingredients | Latin Name | Family Name | Part Used | Swaroopa Process | Anupata Quantity |
|--------|------------------------|-------------------------|----------------|--------------|---------------------|---------------------|
| 1 | Amalaki | Embilica officinalis | Euphorbiaceae | Pericarp | Churna | 1 Pala |
| 2 | Haritaki | Terminalia chebula | Combretaceae | Pericarp | Churna | 1 Pala |
| 3 | Bibhitaki | Terminalia bellerica | Combretaceae | Pericarp | Churna | 1 Pala |
| 4 | Haridra | Curcuma longa | Zinziberaceae | Rhizome | Churna | 1 Pala |
| 5 | Musta | Cyprus rotundus | Cyperaceae | Rhizome | Churna | 1 Pala |
| 6 | Matulunga | Citrus medica | Rutaceae | Fruit | Swarasa | 1 Pala |
| 7 | Go ghrita | - | - | - | Ghrita | 1 Prastha |
| 8 | Jala | - | - | - | Jala | 4 Prastha |

2. Materials and Methods

Three Batches of each Murchita and Amurchita Kushmanda Ghrita was prepared as per the classical SoP described in Sharangadhara Samhita. These were subjected to Physico-chemical evaluation in terms of Organoleptic evaluation, Loss on Drying, Soluble Extractive values, Volatile content, pH, Total solids, Fat content, Specific gravity, Refractive index, Viscosity, Rancidity, Saponification value, Acid value, Iodine Value, Peroxide Value, Ester Value & Free Fatty Acid.

Table 3. Abbreviation for the Kushmanda Ghrita Batches

| Batch | Abbreviation | Batch | Abbreviation |
|---------------------------------------|--------------|--------------------------------------|--------------|
| Amurchita Kushmanda Ghrita Batch 1 | AKG – B1 | Murchita Kushmanda Ghrita Batch 1 | MKG – B1 |
| Amurchita Kushmanda Ghrita Batch 2 | AKG – B2 | Murchita Kushmanda Ghrita Batch 2 | MKG – B2 |
| Amurchita Kushmanda Ghrita Batch 3 | AKG – B3 | Murchita Kushmanda Ghrita Batch 3 | MKG – B3 |

3. Results

- Organoleptic Evaluation
- Physical Evaluation - Loss on Drying, Soluble Extractive values, Volatile content, pH, Total solids, Fat content, Specific gravity, Refractive index, Viscosity,
- Chemical Evaluation - Rancidity, Saponification value, Acid value, Iodine Value, Peroxide Value, Ester Value & Free Fatty Acid.

Table 4. Organoleptic characters of three Batches of Kushmanda Ghrita

| Characters | AKG-B1 | MKG-B1 | AKG-B2 | MKG-B2 | AKG-B3 | MKG-B3 |
|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Colour | Light Brown | Dark Yellow | Brown | Dark Yellow | Light Brown | Dark Yellow |
| Odour | Aromatic | Aromatic | Faint Aromatic | Aromatic | Faint Aromatic | Aromatic |
| Consistency | Viscous | Viscous | Viscous | Viscous | Viscous | Viscous |
| Appearance | Semisolid | Semisolid | Semisolid | Semisolid | Semisolid | Semisolid |
| Taste | Slightly bitter | Slightly bitter | Slightly bitter | Slightly bitter | Slightly bitter | Slightly bitter |

Table 5. Physical Evaluation of three batches of Kushmanda Ghrita

| Test | AKG-B1 | MKG-B1 | AKG-B2 | MKG-B2 | AKG-B3 | MKG-B3 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|
| Loss on drying on 110 ^o C | 0.41% | 0.36% | 0.39% | 0.49% | 0.44% | 0.36% |
| Alcohol Soluble extractive | 22.02% | 19.85% | 22.14% | 17.45% | 21.14% | 19.49% |
| Chloroform Soluble extractive | 8.15% | 9.22% | 8.27% | 9.91% | 9.69% | 9.94% |
| Hexane Soluble extractive | 36.63% | 24.95 | 36.97% | 25.15% | 40.15% | 29.27% |
| Volatile content | 0.34% | 0.34% | 0.36% | 0.42% | 0.34% | 0.38% |
| pH | 4.84 | 4.7 | 4.9 | 4.9 | 4.90 | 4.7 |
| Total Solid | 0.04% | 0.05% | 0.05% | 0.05% | 0.03% | 0.07% |
| Fat content | 98.1 | 96.25 | 98.20 | 95.25 | 97.50 | 96.70 |
| Specific gravity | 0.931 | 0.9223 | 0.94 | 0.920 | 0.91 | 0.926 |
| Refractive Index | 1.49 | 1.452 | 1.51 | 1.440 | 1.40 | 1.45 |
| Viscosity | 40.85 | 39.60 | 40.97 | 38.90 | 37.75 | 39.15 |

Table 6. Chemical Evaluation of three batches of Kushmanda Ghrita

| Test | AKG-B1 | MKG-B1 | AKG-B2 | MKG-B2 | AKG-B3 | MKG-B3 |
|----------------------|----------|----------|----------|----------|----------|----------|
| Rancidity | Negative | Negative | Negative | Negative | Negative | Negative |
| Saponification Value | 222 | 226 | 229 | 220 | 210 | 218 |
| Acid Value | 0.75% | 0.97% | 0.71% | 0.95% | 0.69% | 0.91% |
| Iodine Value | 43 | 34.6 | 44 | 35.4 | 39 | 36 |
| Peroxide Value | 190 | 184 | 184 | 184 | 194 | 180 |
| Ester Value | 226.5 | 230.45 | 227.50 | 226 | 228.25 | 227.45 |
| Free Fatty Acid | 82.15% | 81.15% | 80.14% | 72% | 83.27% | 82.49% |

3.1. Discussion

Organoleptic analysis of Ghrita samples assesses sensory attributes like taste, aroma, colour, texture, and appearance. Amurchita Kushmanda Ghrita is light to brown with faint aroma, viscous texture, and a slightly bitter taste. Murchita Kushmanda Ghrita has a consistent dark yellow color, an aromatic smell, viscous texture, and a slightly bitter taste. Elevated LOD suggests higher moisture, impacting quality and shelf life. Murchita Kushmanda Ghrita (MKG) & Amurchita Kushmanda Ghrita (AKG) both had identical LoD limited to < 0.50 %. The extractive values of Amurchita Kushmanda Ghrita (AKG) and Murchita Kushmanda Ghrita (MKG) samples were evaluated in Alcohol, Chloroform, and Hexane solvents. In Alcohol, AKG exhibited slightly higher solubility than MKG. In Chloroform, both had similar solubility. In Hexane, AKG had notably higher solubility than MKG. Volatile content ranging from 0.34% to 0.42% for AKG and 0.34% to 0.38% for MKG among the batches. AKG samples had pH values of 4.84 to 4.90, while MKG samples ranged from 4.7 to 4.9. Minor pH differences exist between them, both falling within an acidic range. AKG samples had total solid content from 0.03% to 0.05%, while MKG samples ranged from 0.05% to 0.07%. This indicates slight differences in solid content, with both having minimal solids. AKG samples had a specific gravity of about 0.93, while MKG samples averaged around 0.9227. Minor differences in specific gravity suggest slightly higher density in AKG samples, revealing insights into their composition. AKG samples had a refractive index of



around 1.47, while MKG samples averaged about 1.4473. These differences indicate AKG has a slightly higher average refractive index, providing insights into composition. AKG samples averaged around 39.86 viscosity, while MKG samples averaged about 39.20. Minor differences suggest AKG has a slightly higher average viscosity. Both Murchita Kushmanda Ghrita (MKG) and Amurchita Kushmanda Ghrita (AKG) samples exhibited a negative result for rancidity across all measured parameters. AKG samples had a saponification value of about 219.67, slightly lower than the average saponification value of approximately 224.67 for MKG samples, indicating discernible differences between them. On average, AKG samples had an acid value of about 0.72%, slightly lower than the average acid value of approximately 0.94% for MKG samples, indicating noticeable differences between them. AKG samples had an average iodine value of approximately 42.0, slightly higher than the average iodine value of approximately 35.33 for MKG samples⁽⁵⁾. AKG and MKG samples had similar peroxide values, averaging around 186.0 and 182.67. AKG and MKG samples had similar ester values, averaging around 227.75 and 226.15, respectively, indicating minor differences between them. AKG samples had slightly higher free fatty acid content at approximately 81.12% compared to MKG samples, which averaged around 80.26%.

4. Conclusions and Future Scope

The Organoleptic and physicochemical analysis of Kushmanda Ghrita prepared using Murchita and Amurchita Ghrita found to be complies with standards as per the API. Murchita & Amurchita Kushmanda Ghrita were identical in all physicochemical parameters except Saponification Value, Acid Values & Iodine values. Further research is required to assess Murchana role in imbibing the active principles of Kalka and Drava Dravya in Sneha Paka and if it enhances the shelf life and improving the drug absorption.

References

1. Agnivesha, Charaka. Charak Samhita. Ed. Kashinath Pandey and Gorakhanath Chaturvedi. Reprint ed. Chaukhambha Bharati Academy, Varanasi; 2005:1;1004.
2. K. R. Srikanta Murthy; Sarangdhar Samhita; 2nd edition; Varanasi; Chaukhamba Orientalia; Purvakhanda; chapter, 1995.
3. Das Govinda, BhaisajyaRatnavali, edited and enlarged by BhaisagratnaSri Brahmashankar Mishra "vidyotini" Hindi Commentary by Sri Kaviraj AmbikadattaShastri. ChaukhambhaPrakashan. 2006; 25:34:803.
4. Chakrapanidatta, Chakradatta (ChikitsaSangraha of Chakrapanidatta), Dr G. Prabhakara Rao, Apasmarachikitsa Chapter 21 (shlok no. 29-30), P. 371, ChaukhambhaOrientalia, Varanasi, 1994.
5. Bhaisajya Kalpana Vijnana, P V N R Prasad, Chowkhamba Krishnadas Academy, 9788121802385 [Internet]. Bagchee.com. [cited 2023 Jan 6]. Available from: <https://www.bagchee.com/books/BB45540/bhaisajya-kalpana-vijnana>



Figure 1. Finished Kushmanda Ghrita & Murchita Ghrita Samples