IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

"Artificial Preparation Of Kaseesa (Green Vitriol) A Pharmaceutical Study"

Mahantesh Pujeri[1 *], Kasinath Hadimur[2]. KA Patil[3].

* Corresponding author &1. 2nd year PG scholar Dept of RSBK, BLDEAS AVS AMV Vijayapur.
2. Asso. Prof dept of RSBK, BLDEAS AVS AMV Vijayapur.
3. Prof and HOD of RSBK, BLDEAS AVS AMV Vijayapur.

ABSTARCT: -

Kaseesa is one of the iron compound which is explained in Rasashastra under Uparasa group. It is identified as iron sulphate or ferrous sulphate, also known as green vitriol. It can be synthetically prepared in the lab, which is called as artificial kasees or kritrima kaseesa. Regarding these references are noted in the Rasagranthas like Rasatarangini. Shudda Loha Churna, Sura (ethanol) and diluted Gandhakamla (Sulfuric acid) are using for the preparation of artificial Kaseesa.

Method of preparation is according to Rasatarangini 21st Taranga 234 to 239th shloka. Shudda Loha Churna and Diluted Gandhakamla (Sulfuric acid) with distil water (that is 1:9 respectively) are collectively taken in beaker. There will be exothermic reaction between Iron and diluted sulfuric acid leading to changes in color and Physical appearance of artificial Kaseesa can be observed in the beaker was noticed.

shudda Loha Churna used for the preparation of Artificial Kaseesa is about 60gms and final quantity of artificial Kaseesa we got is about 58.620gms, and diluted sulfuric acid used is 220ml and filtration of mixer of diluted sulfuric acid and Shudda Loha Churna is about 180ml and ethanol used for the preparation of artificial Kaseesa is 180ml that is equal to filtrate.

Keywords: - Kaseesa, Shudda Lohachurna, Dilution of sulfuric acid, Ethanol, artificial preparation of Kaseesa.

INTRODUCTION: -

Kaseesa is an important drug asRasashastra grouped under UparasaVarga[1].It has various synonyms like Pamshuka, PamshuKaseesa, Khaga[2]. Mineral drugs hold a special place in Ayurveda Rasashastra, as they possess potent therapeutic activity at small doses when properly processed with different process like shodhana, Marana etc. Kaseesa is the third dravya inUparasa group. It is identified as iron sulphate or ferrous sulphate majorly. Iron sulphate is the chemical compound with the formula $FeSO_4$. It is chiefly used in the treatment of Netrarogas(eye disorders), Pandu(anemia), Arsha(piles), Kusta(skin diseases), and other conditions where its RaktaVardaka, Krimighna and Kaphahara properties are beneficial[3].

Traditionally, Kaseesa was obtained naturally as a mineral, but due to lack of natural sources and impurities present in raw form, artificial preparation methods have been developed and described in classical Rasashastra texts as well as in modern Pharmaceutics. The artificial method of preparing Kaseesa has great

significance in Ayurveda, as it bridges the gap between classical knowledge and modern pharmaceutical techniques, ensuring sustainable availability of this essential Rasadravyas.

Aims And Objectives: -

Artificial pharmaceutical preparation of Kaseesa according to Rasatarangini.

Materials And Methods: -

Materials:

Ingredients: -

- Lohachurna
- Absolute alcohol (Ethanol). (Sura)
- Sulfuric acid: -10% diluted with distil water. (Gandhakamla)

Equipment's: -

- Khalwa Yantra
- Glass Pipette
- Glass beaker
- Glass Stirrer
- Filter paper
- Glass funnel

Method:

विशुद्धंलोहचूर्णन्तुकाचपात्रेपिधापयेत्।
सजलंगन्धकद्रावशनैस्तस्मिन्विनिक्षिपेत्।।२३४।।
तावन्तंद्रावकंदद्याद्यावतादुतिमाप्नुयात्।
क्षणेनैवोष्णतांयातिफेनश्चोत्तिष्ठतेपरम्।।२३५।।
ततःसारकपत्रेणसारयेद्रसकोविदः।
मलंसारकपत्रस्थंहित्वाद्रवमिहाहरेत्।।२३६॥
द्रवोन्मितांक्षिपेत्तीव्रांनिर्जलांविमलांसुराम्।
सुरानिक्षेपणाद्यातिकासोसंतुतलस्थताम्॥२३७।।
ततोद्रवमिमंहित्वाचूर्ण' घर्मनिधापयेत्।
भानुमानुत्रिशुष्कन्तुकासीसंजायतेऽमलम्॥२३८॥
द्विभागिकन्तुकासीसंसलिलेतुत्रिभागिके।
निक्षिप्तंद्रवतांयात्तीत्याहूरसविशारदाः॥२३६॥ **RT. 21/234-239**

It was carried out in 3 sub practicals: -

1. Shudda Loha churna preparation
2. Dilution of sulfuric acid
3. Artificial preparation of Kaseesa

I. Preparation of Shudda Loha Churna:

LOHA: - Loha (iron) is the one among dhatu varga which is mentioned in third Suddha loha[4]**.** Iron is one of the elements with the symbol Fe and atomic number 26. Powder of this loha used in the artificial preparation of kaseesa.

Shudda Loha is taken and weighed. Shudda Loha taken in clean Khalva Yantra and triturated well. After fine trituration, Sieving of Suddha Lohachurna was done. Sieved Suddha Loha Churna collected and weighed and stored.

Figure number 1 to 4:- Preparation of ShuddaLohaChurna.

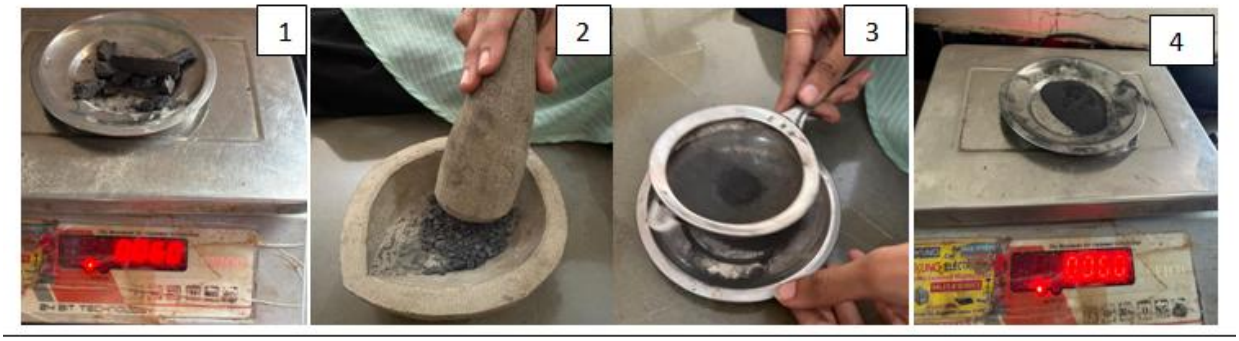


Figure number. 1: Weighing of Shuddaloha, 2: Trituration of ShuddaLoha, 3: Sieving of Triturated Shudda Loha Churna, 4: Weighing of obtained Shudda Loha SukshmaChurna.

II. Dilution of sulfuric acid:

For the preparation of artificial Kaseesa we used diluted sulfuric acid. For dilution of sulfuric acid added 10 parts of acid to 90 parts of water[5].

Note: -when diluting of sulfuric acid, add acid to water not water to acid because it gives fair amount of heat when reacting and boil the first few drops of water entering the acid and blow up in your face[6].

Figure 1 and 2: - Preparation of dilute sulfuric acid.

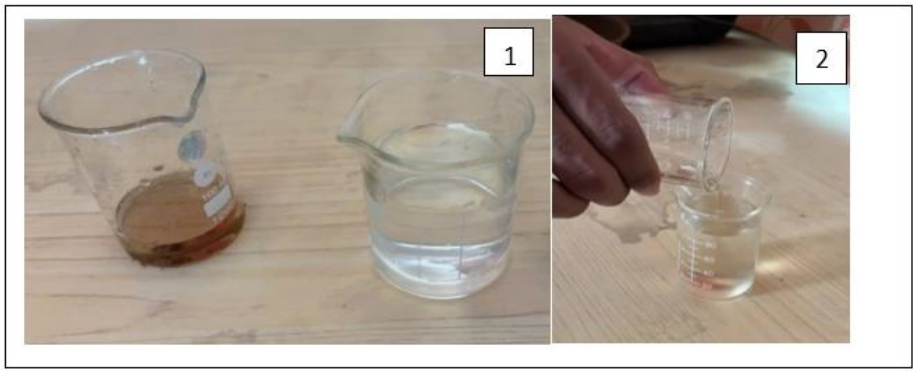


Figure no.1: 90ml of water and 10ml of concentrated sulfuric acid, 2: Adding of concentrated sulfuric acid to water.

Pure alcohol (ethenol): - Ethanol is a pure alcohol when it reaches approximately 100% concentration, at which point it is called as absolute alcohol. This pure form is a colourless, flammable liquid used in various applications, including as a disinfectant, preservative, and solvent in industries and laboratories. Unlike the diluted ethanol found in beverages, pure ethanol contains no or minimal water and is crucial for applications where its purity is essential for chemical reactions or preventing interference from water[6].

III. **Method of preparation of artificial Kaseesa: -**

Shudda Loha was taken and powdered in Clean Khalwa Yantra. Shudda Loha Churna was taken in a clean glass beaker and slowly added diluted Sulfuric acid little by little till the Lohachurna got completely dissolved in it. When Lohachurna is added, Lohachurna immediately became hot and foam occurred.After foam got subsided, solution was filtered through filter paper. Impurities were collected over the filter paper, this was discarded and only filtered liquid part is collected. To that filtrate collected equal quantity of pure Absolute alcohol was added and stirred. By adding and stirring absolute alcohol, Kaseesa got settled at bottom of the glass beaker. Supernatant liquid in the beaker was discarded and settled Kaseesa is collected and dried and stored[7].

Figure number 1-12: Preparation of artificial Kaseesa

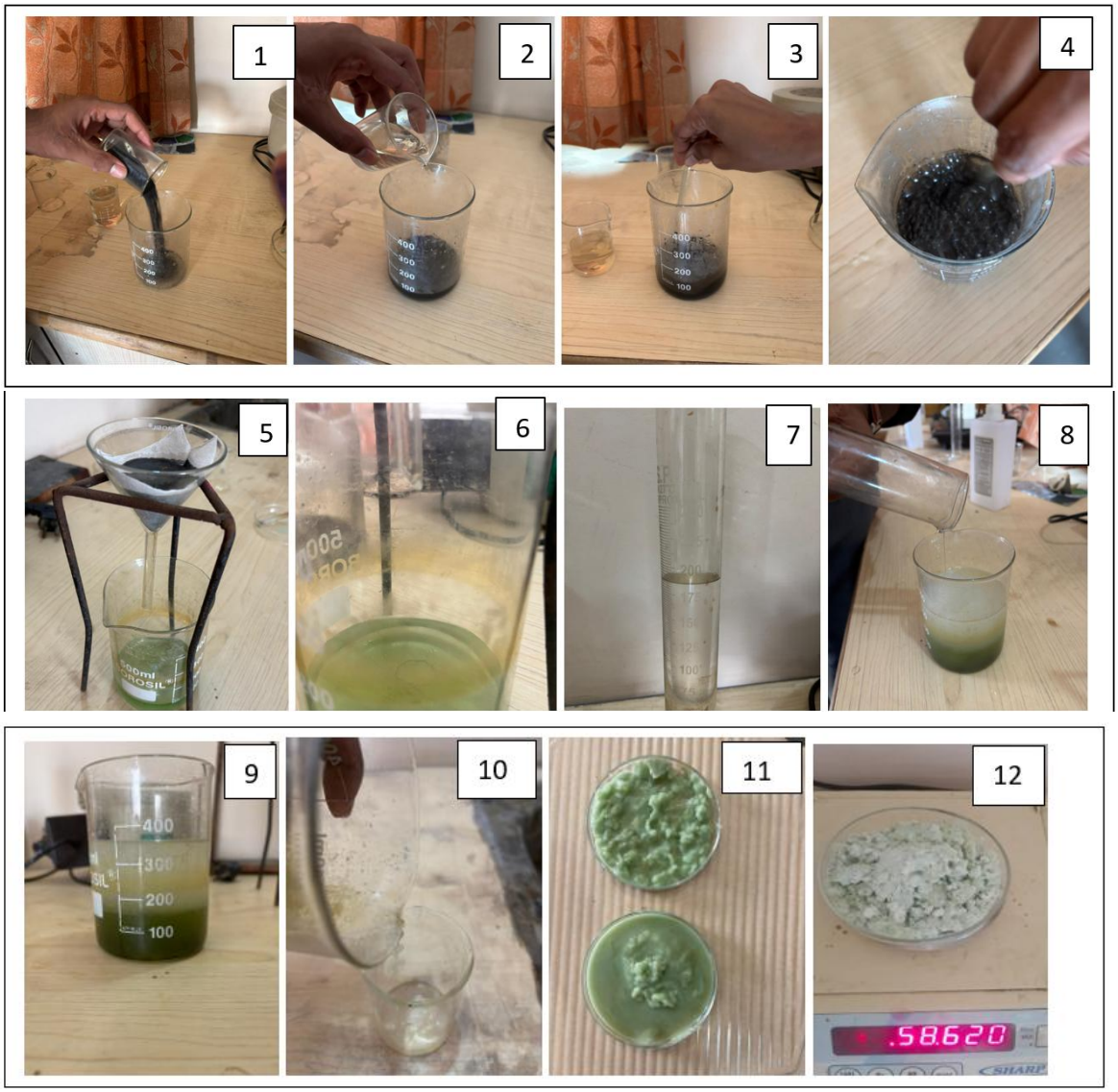
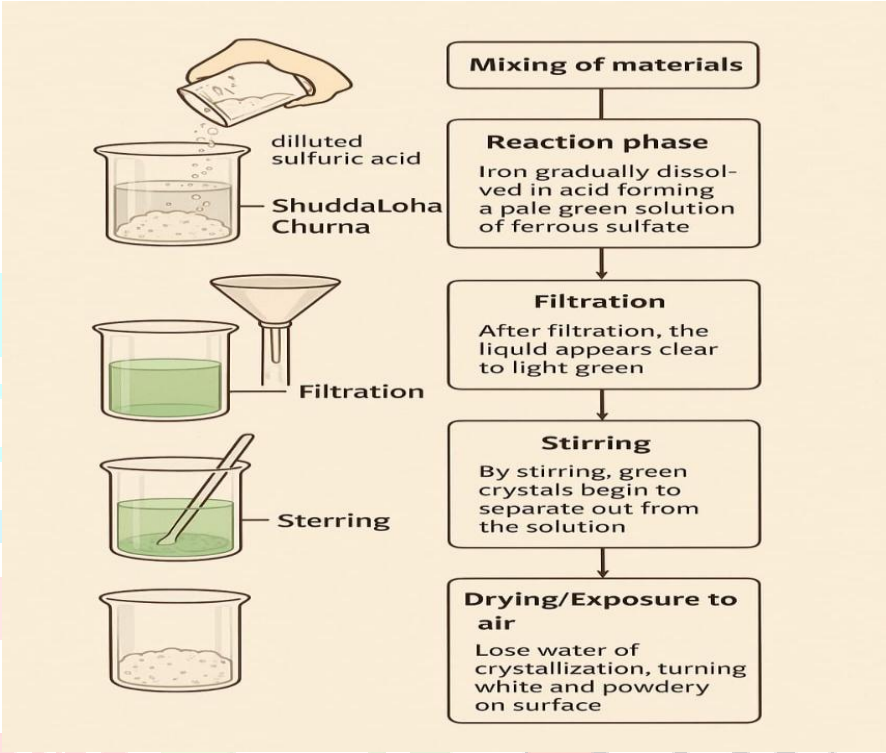


Figure number 1: Adding Loha Churna in beaker, 2:Adding diluted sulfuric acid, 3:Stirring, 4:Formation of froth, 5: Filtration, 6:Final product after filtration, 7: Absolute alcohol, 8: Adding of Absolute alcohol to the Filtrate, 9: Settling of Kaseesa at the bottom of beaker, 10:Discarding of supernatant liquid, 11:Kaseesa collected from the beaker and kept for drying, 12: Final product of Kaseesa.

OBSERVATION: -

1. Mixing of materials; -When Shudda Loha Churna is kept in contact with diluted sulfuric acid effervescence is observed and liberation of colourless gas like hydrogen with a characteristic sound of bubbling.
2. Reaction phase: - Iron gradually dissolved in acid forming a pale green solution of ferrous sulphate.
3. Filtration: - After filtration, the liquid appears clear to light green.
4. Stirring: - By stirring, green crystals begin to separate out from the solution. Crystals are like glassy appearance.
5. Drying/Exposure to air: Lose water of crystallization, turning white and powdery on surface.



RESULTS: -

Table no 1: shows the weight of raw materials taken and weight of final product got

Initial Shuddaloha taken	61gms
Obtained ShuddaLohaChurna	60gms
Diluted Sulfuric acid used	220ml
After filtration obtained liquid	180ml
Pure alcohol (Ethanol) used	180ml
Final quantity of Kaseesa	58.620gms

DISCUSSION: -

Kaseesa, one of the important uparasa dravya described in Rasashastra, is chemically identified as Ferrous Sulphate ($FeSO_4$), commonly known as green vitriol or copperas. Though it occurs naturally in association with iron pyrites, the artificial method of preparation is often preferred due to issues of impurity and scarcity in natural sources. Artificial preparation provides a more reliable supply with uniform quality, which is highly beneficial for pharmaceutical purposes and research. The basic principle behind its preparation is the reaction of metallic iron with dilute sulphuric acid. When clean iron powder is immersed in dilute H_2SO_4, effervescence is observed due to the liberation of hydrogen gas, and ferrous sulphate is formed in solution. This solution is filtered to remove impurities, concentrated by slow evaporation and allowed to crystallize, leading to the formation of bluish-green monoclinic crystals of Kaseesa. These crystals are then collected, dried, and stored in airtight containers to prevent oxidation of ferrous to ferric salt. During preparation, clear observations include effervescence, gradual change of solution color to pale green, and the deposition of characteristic green crystals on cooling. The general equation for this reaction is **$Fe(s) + H_2SO_4(aq) = FeSO_4(aq) + H_2(g)$**

Artificial preparation of Kaseesa ensures purity, standardization, and availability, making it superior to naturally sourced material which may contain unwanted metallic and mineral impurities. Moreover, this method aligns with modern pharmaceutical standards of reproducibility and safety while preserving the therapeutic attributes of Kaseesa as described in Ayurveda. It is used in the management of Paṇḍu (anemia), Netraroga (eye disorders), Kuṣṭha (skin diseases), Arsha (piles) and other conditions. Hence, artificial preparation of Kaseesa not only maintains the authenticity of Ayurvedic principles but also enhances its applicability in contemporary practice by ensuring a consistent and standardized drug source.

Ingredients used for the preparation of artificial Kaseesa are easily available and shudda Loha Churna used for the preparation of Artificial Kaseesa is about 60gms and final quantity of artificial Kaseesa we got is about 58.620gms, and diluted sulfuric acid used is 220ml and filtration of mixer of diluted sulfuric acid and Shudda Loha Churna is about180ml and ethanol used for the preparation of artificial Kaseesa is 180ml that is equal to filtrate.

CONCLUSION:

Artificial preparation of Kaseesa is a simple, scientific and reliable process that ensures a pure form of Kaseesa. By reacting iron with dilute sulfuric acid and obtaining crystals through controlled crystallization, one can achieve a product free from natural impurities and suitable for therapeutic use. This method guarantees uniform quality, easy availability, and stability, which are essential for both Ayurvedic formulations and modern research. Thus, artificial preparation not only preserves the traditional utility of Kaseesa but also enhances its scope in present-day pharmaceutical applications. Thus, artificially prepared Kaseesa, when used in appropriate Saṃskara and formulations, retains its Rasa–Guṇa–Karma and proves highly effective in many diseases.

Scope: It has given further scope for its therapeutic efficacy evolution in the indication of kaseesa Bhasma.

REFERENCES: -

1. Dattatreya Anant Kulkarni, Rasaratnasamucchaya by Rasavagbhatta, Vigyanbodhini Hindi Commentary, MeherchandaLaxmidas Publications, New Delhi, Prathama Bhaga, 2007 Ed. 3/1.
2. Kashinath Shastry, Rasatarangini, Hindi Commentary, Motilal Banarasidas Publications, Delhi, 2012 Ed. 21/227.
3. Pranacharya Shri Sadananda sharmaVerachita, *Rasatarangini*, By Pandit Kashinath Shastrini, Motilal banarasidasPrakashana, Delhi, 1979, 21st Taranga 231st to 233rd shloka.
4. Shri VagbhatacharyaVirachita, Rasa RatnaSamucchaya, By Kaviraja Shri Ambikadatta Shastri Vyakyakruta, ChoukambaAmarabharatiPrakashana, Varanasi, 6th edition, Samskarana 1995,5th chapter 1st Shloka.
5. https://www.quora.com/What-is-the-formula-for-dilute-sulfuric-acid retrived on 18/09/2025.
6. https://www.google.com/search?q=ethenol+as+pure+alcoholretrieved on 18/09/2025.
7. Pranacharya Shri Sadananda sharmaVerachita, *Rasatarangini*, By Pandit Kashinath Shastrini, Motilal banarasidasPrakashana, Delhi, 1979, 21st Taranga 234th-239th Shloka.