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Ramya M Pavate

PG Scholar, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

Vinaykumar R Kadibagil

Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

Gazala Hussain

Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

Aishwarya L Hegde

Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

Anusha KR

Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

Gayathri Sajeev

Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

Corresponding Author:**Ramya M Pavate**

PG Scholar, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

A short note on Sudha: A mineral source

Ramya M Pavate, Vinaykumar R Kadibagil, Gazala Hussain, Aishwarya L Hegde, Anusha KR and Gayathri Sajeev

Abstract

Rasashastra is a branch of *Ayurveda* pharmaceuticals where drugs of varied origin like metals, minerals, marine drugs are employed in therapeutics. *Sudha* is one of the drugs of calcium containing group termed under *sudha varga* (marine compounds), *shuklavarga*, *shwetavarga* which is considered to be oxide of calcium. Thorough search of classical texts and articles was carried out to collect data about the drug. *Sudha* is categorised under different groups by different authors. This classification of drugs may be based on physical and chemical properties of drugs of that group. References for direct use as *sudha* or as *churnodaka* having both pharmaceutical and therapeutic utility was found. *Sudha* is most used drug for purification of *dravya* to remove the impurities and toxic effects.

Keywords: *Sudha*, *shukla varga*, *shweta varga*, *churnodaka*, calcium oxide

Introduction

Sudha (quick lime) is a calcium containing drug included under *sudha varga* (group of calcium containing drugs). In *Charaka* and *Sushruta samhita*, *sudha* has been included under *parthiva dravyas* [1-2]. Both, *rasaratnakara* and *rasarnavakara* have enumerated in *shweta / shukla varga* [3-4]. The authors of *Rajatarangini* and *rasamritam* have explained this drug under *talakadi* and *sudha vijnaneeya* respectively [5-6]. *Sudha* is chemically oxide of calcium where calcium and oxide are in equal ratio.

The name calcium is derived from latin word *calx* meaning lime or limestone in which it is found. Calcium ranks the fifth in the order of abundance of elements in earth's crust, the percentage being estimated as 4.2%. It is a soft, silvery-white crystalline metallic element. It readily reacts with both oxygen and water [7].

Calcium as such does not exist in free form but its compounds are vividly distributed. It occurs as- 1] Calcium carbonate in the form of lime stone, chalk, marble, coral, calcite, calc spar, Iceland spar; 2] Calcium sulphate in the form of gypsum; 3] Calcium fluoride in the form of fluorspar; 4] Calcium phosphate in the form of mineral appetite and phosphate [8].

Material and Method

Thorough search of classical books, related articles and digital media were done to collect the information about *sudha* and its preparation.

Observation and results

Sudha is one among the mineral sources of calcium. It is oxide of calcium having calcium and oxide in 1:1 ratio. This (quicklime - CaO) is obtained by heating limestone (CaCO₃) at high temperature [9].

The synonyms of *sudha* are *churna*, *churnaka*, *sudha churna*, *saudhalepana*, *saudhavilepa*, *shilakshara*. It is used either directly or in the form of *churnodaka* (lime water) for *shodhanadi* (purification etc.) processes and *yoga* (pharmaceutical) preparations.

***Sudha churna*:** It is used both in processing of drugs and in preparation of medicine

Table 1: Pharmaceutical utility of *sudha churna*

Sl. No.	<i>Dravya shodhana</i> (drug purification)	Method	Reference
1	<i>Parada shodhana</i> (purification of mercury) - 1 st method	Mardana (trituration)	Rajatarangini 5/27
2	<i>Parada shodhana</i> (purification of mercury) - 6 th method	Mardana (trituration)	Rajatarangini 5/36

Therapeutic utility of *sudha churna*: It is used along with other drugs either internally as *parpati* (flake like medicine) or externally as application.

Internal

Sudha parpati:^[10] 1 part of lime is added with 2 parts of sulphur and mixed well. This mixture is melted on fire to make into *parpata* (flake like) is known as *sudha parpati*. It can be used in *yavana pidika* (acne vulgaris), *kanthamala* (goitre), *prameha pidika* (diabetic carbuncle) and *twak rogas* (skin diseases) in the dose of 1-2 *ratti* (125-250 mg) along with water or milk.

External^[10]

- Lime mixed with honey or jaggery if applied as paste, removes the pain of knee joint.
- Lime mixed with white part of egg and honey can be pasted on gauze and applied on injury gives good relief.

Churnodaka

One of the preparations of *sudha* is *churnodaka*. It is the clear supernatant liquid obtained by mixing *sudha churna* with *jala*^[11]. It is also known as *sudhodaka*^[12]. There are two references of *churnodaka* mentioned in Rajatarangini having different ratio of *churna* and *jala* used for different purpose.

Method 1: This is prepared by adding 1 part of *dagdha churna* (burnt lime) to 3 parts of *jala* (water) and kept undisturbed until clear supernatant is obtained. This has to be collected and used for *shodhana* of *gandhaka*^[13].

Method 2: It is prepared by adding 2 *ratti* (250 mg) of *sudha* to 5 *tola* (60 ml) of *jala* and kept undisturbed for 3 *yama* (9 hrs). Later the supernatant liquid is collected carefully by filtering through filter paper into glass bottle and used further.

Properties: It is having *tikta* (bitter) - *madhuara rasa* (sweet taste), *sheeta guna* (cold) and is *pitta - kapha shamaka* (alleviates pitta and kapha)^[14].

Karma: It is *dugdha pachaka* (helps for milk digestion in children), *dravaka ashana sambhoota vishakriya hara* (It brings down the toxic effect of *gandhaka dravaka* [H₂SO₄]).

Indication: It is administered in *krimi* (worm infestation), *atisara* (diarrhea), *amlapitta* (hyperacidity), *shoola* (pain), *grahani* (disorders of bowel)^[15].

Dose: It should be taken in the dose of 30-60 drops for children aged 1 year and 24 ml for adults.

Preservation: This has to be preserved in green glass bottle^[16].

Table 2: Pharmaceutical utility of *churnodaka*

Sl. No.	Dravya shodhana (drug purification)	Method	Reference
1	<i>Gandhaka</i> (sulphur) <i>shodhana</i> - 6 th method	Boiling	Rajatarangini 8/26-31
2	<i>Haratala</i> (arsenic trisulphide) <i>shodhana</i> - 5 th method	<i>Bhavana</i> (trituration)	Rajatarangini 11/25
3	<i>Manahshila</i> (arsenic disulphide) <i>shodhana</i> - 1 st method	<i>Nimajjana</i> (soaking)	Rajatarangini 11/109
4	<i>Vanga</i> (tin) <i>shodhana</i> - 1 st method	<i>Dalana</i> (pouring molten metal into liquid)	Rajatarangini 18/8
5	<i>Naga</i> (lead) <i>shodhana</i> - 2 nd method	<i>Dalana</i> (pouring molten metal into liquid)	Rajatarangini 19/10
6	<i>Yashada</i> (zinc) <i>shodhana</i> - 1 st method	<i>Dalana</i> (pouring molten metal into liquid)	Rajatarangini 19/98
7	<i>Mukta</i> (pearl) <i>shodhana</i> - 3 rd method	<i>Putra</i> (incineration)	Rajatarangini 23/69
8	<i>Rakta chitraka</i> (<i>Plumbago rosea</i> linn.) <i>shodhana</i>	<i>Nimajjana</i> (soaking)	Rajatarangini 24/575
9	<i>Haratala</i> (arsenic trisulphide) <i>shodhana</i>	<i>Swedana</i> (boiling)	Rasaratna samuchhaya 3/74

Therapeutic utility of *churnodaka***Internal**^[17]

- *Churnodhaka* when used judiciously as *basti dravya*, alleviates *krimi* of intestine and anal region.
- Intake of *churnodaka* will bring down the toxic effect of arsenic poisoning.
- It cures *amlapitta* when judiciously administered along with milk.

External

- Lime water and coconut oil taken in equal quantity should be stirred with glass rod till white colored lotion is formed which is used for curing burning sensation in burns.^[10]
- *Churnodhaka* added with *navasadara* brings down the toxic effects of scorpion bite, when applied on bitten part.
- Daily gargling with *churnodaka* will cure stomatitis and wounds in oral cavity.
- *Churnodaka* and *atasi taila* is taken in equal quantity should be stirred with glass rod till thick solution is formed, which is applied over burnt area to reduce burning sensation in burns.

Discussion

Sudha being the richest source of calcium is classified under *shukla varga* based on physical properties and under *sudha varga* based on chemical properties. It is immensely used in *rasashastra* for purification of *rasadravya* like *parada*, *gandhaka*, *haratala*, *manahshila* and for preparation of medicines like *sudha parpati*, *churnodaka*.

Even though single use of *sudha* is not seen much in classics, along with other drugs it is used in the *samanya shodhana* of *parada* to remove soluble impurities; internally, a formulation termed *sudha parpati* is indicated in diseases like goitre, skin eruptions, etc. and externally as application on wound^[18].

The two references of *churnodaka* preparation in the same classical text can be due to its utility for different purpose. The concentrated *churnodaka* with less quantity of water that is used for *shodhana* may help in better removal of impurities and in imbuing therapeutic value to the drug. The diluted *churnodaka* with more ratio of water to reduce its alkalinity, is used in ailments of children and also in purification certain metals and minerals. The reason behind using in *shodhana* of different *rasa dravya* namely arsenic compounds and metals is to remove their physical-chemical impurities, toxic effects and also to imbibe its properties into the *rasa dravya* for better therapeutic efficacy. It is also used internally as an antidote to reduce symptoms caused by arsenic poisoning. Due to its strong alkaline [12.5-12.8] nature, it reduces *paittika* symptoms like acidity in GI tract and make the pH unsuitable for worm survival^[19]. Externally it is used for treating burn and wounds, helps in reducing the burning sensation and better healing of the wound.

Conclusion

Sudha is the first and most common drug of *sudha varga* *dravya* having calcium in more ratio. It is used for both pharmaceutical and therapeutic purpose to imbibe its properties in the drug. Pharmaceutically it is used for the *shodhana* of different *rasadi dravya*. Therapeutically, it is used to reduce *pittaja* symptoms like hyperacidity, arsenic

poisoning, burning sensation.

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