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THERAPEUTIC SIGNIFICANCE OF CALCIUM COMPOUND IN AYURVEDIC SYSTEM OF MEDICINE- A SYSTEMATIC REVIEW.

Ayurveda

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ABSTRACT

Rasashastra, a vital part of Ayurveda, mainly deals with metals, minerals, mercury, and animal-based medicines that have alchemical and medicinal value. Rasashastra is unique in that it uses mixtures of metals and minerals for therapeutic purposes. Sudha Varga Dravyas are a class of drugs with a high concentration of calcium. Calcium, the most common mineral in the human body, is vital to human physiology. The distinct chemical component of calcium compounds led to the first complete grouping of all calcium compounds into one category, called the "sudha." Sudha Varga In clinical practice, dravyas, or calcium compounds, have grown in importance as medicinal agents. The calcium percentage was determined by doing individual analyses of the several ancient manuscripts that Sudha Varga quoted for Shodhana and Marana. They were investigated using several Rasa Shastra sources. Additional information regarding calcium and its absorption was discovered using Google databases.

KEYWORDS

Calcium Compounds, Rasashastra, and Sudha Varga.

INTRODUCTION

In the human body, calcium is the most common mineral. For adults and adolescents up to the age of 24, the recommended daily intake of calcium is 1,200 mg; for older persons, it is 800 mg. Calcium is necessary for humans to build and maintain healthy bones. Additionally, it is necessary for appropriate communication between the brain and other bodily parts. It facilitates cardiovascular and muscular function.[1]

Rasashastra covers a wide spectrum of metal and mineral-based medical drugs, including their types, characteristics, therapeutic values, appropriate dosages, potential side effects, management, and alchemical processes. Sudha varga dravyas have been shown to be beneficial in the treatment and prevention of a variety of ailments, including acid peptic disease (amlapitta), irritable bowel syndrome (grahani), duodenal ulcers (parinamashula), dyspnea (swasa), cough (kasa), cardiac disorders (hrudroga), calcium supplementation, and various alchemical processes. Every drug on the Sudha Varga Dravyas list has calcium in the form of compounds, specifically salts. Calcium is important in physiology because it regulates digestive secretions, muscular contraction, bone structure, and heart function.

Sudha (lime) is classified as "parthiva dravyas" in the Charaka Samhita and Susruta Samhita (classical Ayurvedic literature). Shukla Varga lists both rasaratnakara and rasarnava.[2] Rasamritam categorized these medications as "sudha vijnaneeyam" based on their chemical composition.[3]

Table-1: Sudhavarga Dravyas

Sl. No	Name	Common Name	Origin	Chemical Constituents	Form
01	Sudha	Lime	Mineral	CaO	Oxide
02	Khatika	Chalk	Mineral	CaCO3	Carbonate
03	Godanti	Gypsum	Mineral	CaSo4.2H2O	Sulphate
04	Sankha	Conch shell	Marine	CaCO3	Carbonate
05	Shambuka	Australian snail	Marine	CaCO3	Carbonate
06	Mukta shukti	Pearl oyster shell	Marine	CaCO3	Carbonate
07	Kaparda	Cowrie shell	Marine	CaCO3	Carbonate
08	Kurmaprista	Turtle shell	Marine	Calcite	Phosphate
09	Samudraphena	Cuttle fish bone	Marine	CaCO3	Carbonate
10	Pravala	Coral	Marine	CaCO3	Carbonate
11	Mukta	Pearl	Marine	CaCO3	Carbonate
12	Mrigashringa	Deer antlers	Animal	Ca3(PO4)2	Phosphate
13	Kukkutanda twak	Hen's egg shell	Animal	CaCO3	Carbonate
13	Ajasthi	Goat's bone	Animal	Calcium, Phosphorous etc.	Phosphate

Sudha varga includes both khanija dravyas (mineral treatments) like khatika, sudha, and godanti, as well as pranija dravyas (animal products) such samudraphena, sankha, shukti, kaparda, kurmaprista, mrigashringa, kukkutanda twak, mukta, pravala, and so on. Kaparda is classified as a "sadharana rasa"[4] (group of minerals based on their significance in alchemical mercury processing), while pravala and mukta are classified as "ratna varga" (group of gems).[5]

Table 2: Sudha Varga Dravyas According To Different Authors

SL.No	Name	Rasarnava & Rasaratnakara	Ananda Kanda	Rasamrita	Ayurvediya Rasashastra – S. Mishra	Rasashastra – The Mercurial System
1	Sudha	+	-	+	+	+
2	Khatika	-	-	+	+	+
3	Godanti	-	-	+	+	+
4	Sankha	+	+	-	+	+
5	Shambhuka	-	+	-	+	+
6	Mukta shukti	-	+	-	+	+
7	Varatika	+	-	-	+	-
8	Kurmaprista	+	-	+	+	+
9	Suramasaphed	-	-	+	-	-
10	Pravala	-	-	-	+	+
11	Mukta	-	-	-	+	+
12	Mrigashringa	-	-	-	-	+
13	Kukkutanda twak	-	-	-	+	+
14	Ajasthi	-	-	-	+	-
15	Badarashma	-	-	-	+	-

16	Vamshalochana	-	-	-	+	-
17	Swetanjana	-	-	-	-	+
18	Hastidanta	-	-	-	-	+

Table:3: Some Preparation Containing Calcium Compound

Sodhanartha	Churnodaka
Churna	Khatikadi churna, Dashana samskara churna, Hridya churna, Samudraphena churna, Loothavishanashaka agada
Drava	Sankha drava
Pisti	Pravala and Mukta pisti
Vati/Gutika	Trirekha vati, Mahashanka vati
Peya	Khatikadi peya
Lepa	Samudraphenaja shothagna lepa
Parpati	Sudha parpati
Pottali	Grahanikapata ras, Kaphaketu ras, Ratnagarbha pottali ras, Hiranyagarbha pottali ras
Bhasmas	Kasisa godanti bhasma, Godanti bhasma, Sankha bhasma, mukta bhasma, kukkutanda twak bhasma, Pravala panchamrita ras

1. External Application:

- Churnodaka is administered in several forms, including lepa (pack) and prakshalana (wash). Collyrium (anjana), a fine powder made from samudraphena, pippali (Piper longum Linn), and saindhava lavana (rock salt), is recommended for shukla dosha (eye issues related to the sclera).[6]
- Netra varti, made with samudraphena, copper sulphate, and hareetaki fruit powder, is used to treat trachoma.
- Samudraphena powder is blown into the ear through a pipe during ear discharge (shruti srava/karna sarva), which is chornic in character.
- To promote faster wound healing (vranaropanartha), mix equal parts samudraphena and mruddara shringa (PbO) with honey. [7]

2. Internal Administration:

- Churnodaka is not only used to prepare alkali but also for oral gargling, internal administration, and enema.[8] It is beneficial to combine samudraphena with either samaguna kajjali or hingulanvita samudraphena (HgS+CaCO3) for kapha pittaja jwara.
- It is advised to provide shukra dhatu (final dhatu) shodhana internally by combining samudraphena churna with kokilaksha kashaya (decoction of Hygrophila auriculata Reine), katphala (Myrica esculenta), usheera (Vetiveria zizanioides Linn), and ikshu (Saccharum officinarum Linn). The only text that included suramasaphed was rasamritam, and it was thought to be a stand-in for godanti bhasma.[9]
- Godanti bhasma relieves pitta dosha, stops bleeding, and lessens hyperacidity because of its sheeta (cool) efficacy. In cases of acid reflux disease, godanti bhasma is useful in curing ulcers. Additionally, it is the recommended treatment for burning feelings. In cases of acid reflux disease, godanti bhasma is useful in curing ulcers. Additionally, it is the recommended treatment for burning feelings. In cases of dysentery and diarrhea, it halts bleeding.
- Osteoporosis back pain, rickets, and intermittent claudications are among the conditions that Godanti bhasma effectively addresses. It aids in children's tooth development and strengthening. At a dose of 1-3 gunja (125-375 mg), combined with honey, cow's milk, or cow's ghee as an adjuvant, it effectively lowers leucorrhoea and regulates menorrhagia bleeding in women.Milk, butter, or cow's ghee are used to make mriga shringa bhasma in hrith shula. Use apamarga beeja (seeds of Achyranthes aspera Linn) or pippali powder in situations of dysponea and hiccups.
- Kurma prista bhasma is used at a dose of 250–500 mg (2-4 ratti) in the postnatal period (prasutha), kshaya peeditha, apasmara (epilepsy), and bala roga (paediatric illnesses) as an adjuvant with guduchi sattva (starch of Tinospora cordifolia Willd Meirs).[10]

DISCUSSION

- Recent authors added Ajasthi because of its chemical composition, which comprises organic calcium and other elements. Ajasthi bhasma is used to treat rickets in nursing mothers, during the prenatal period, hair loss, dental eruptions, and as a natural calcium supplement. It is recommended that you take 250-500mg of it with honey three times daily.[11]
- Recent authors have added Kukkutanda twak, which is strong in calcium. It is effective in cases of rickets, encourages tooth eruption, and acts as a calcium supplement for pregnant and lactating women. It is also used to treat hair loss, coughing, tuberculosis with cavities, asthma, diarrhea, and menorrhagia.[12]
- Sudha varga dravyas are utilized in formulations to cure conditions like amlapitta, grahani, and atisara. For example, Pravala panchamrutha ras is utilized to treat amlapitta.[13]
- Muktapanchamrita rasa is connected with fever and tuberculosis. Suddha khatika with cold water (sheeta jala) is advised for Pravahika, Pittasra, and Grahini.[14]
- Mukta pisti has appreciable properties (adhika gunakari), is beneficial in unmade (insanity caused by intoxication), in raktatisara (bloody diarrhoea), acts as an antidote to poison, expels accumulated doshas, increases strength, virility, and longevity, activates digestion, and alleviates digestive and metabolic diseases. It alleviates burning symptoms.Pravala pisti is good for your heart (hridya), sheeta guna, laghu (light), pittanashaka, chakshushya (eyes), atyanta soumya (gentle), and ayushya.[15] In asthimruduta (rickets) associated with kasa, equal parts of pravala pisti and shrunga Bhasma.[16] Pravala pisti, kukkutanda twak bhasma, ajasthi, and other sudha varga dravyas are mild organic forms of calcium carbonate that can help with rickets and osteoporosis as a calcium supplement at a low dose of 125 - 250 mg (1-2 ratti).

Calcium is a necessary vitamin for the human body. Calcium is primarily obtained through our diet. However, the presence of phytates, oxalates, and other compounds limits calcium absorption. Many Asian countries have an average dietary calcium consumption of less than 500 mg/day. Most African and South American countries consume between 400 and 700 mg of calcium per day. Only Northern European countries have a national calcium intake over 1000 mg/day. As a result, calcium supplements become necessary. Several types of calcium compounds are utilized as supplements. Modern calcium supplementation has issues such as determining correct gut absorption, selecting appropriate compounds based on clinical conditions, determining dose, and so on. Ayurvedic medicine supplies calcium with plant, animal, and mineral-based medications. Ayurvedic calcium supplements are utilized for a variety of diseases, including fever and heart conditions. [17]

CONCLUSION

Calcium in cereals and green leafy vegetables is less utilized because they include oxalates and phytates, respectively. Calcium compounds are alkaline by nature. Natural calcium preparations, such as bhasmas, are more efficient than synthetic calcium because they contain an easily absorbable and assimilable form of oxide, as well as trace elements such as magnesium, copper, and zinc. They are effective regardless of the gastrointestinal condition, in contrast to synthetic compounds, which cannot be absorbed in unhealthy gut circumstances such as indigestion, chronic gut motility abnormalities, and hormone imbalances. The added benefit of bhasmas of sudha varga dravyas is that they exhibit other medicinal activities, such as relieving indigestion and characteristics

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