



**A REVIEW ON “ROLE OF CALCIUM SUPPLEMENTS IN CHILDREN” AS PER
AYURVEDA**

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ABSTRACT

Calcium is one of the important elements of human body, which involves in many physiological activities. The dietary material served as a source of calcium in body. Human beings generally consume sufficient calcium but lack of absorption of calcium is major issue associated with calcium deficiency. Many countries suffering from the health issues related with low dietary calcium intake and Asian countries mainly witnessed the same issues. The calcium supplements play vital role to combat this problem and several forms of calcium compounds are used as supplements. Ayurveda uses drugs as calcium supplements obtained from the plant, animal and mineral origin. The use of calcium supplement is much needed in children since deficiency may causes several health abnormalities in early growing age. In this regards Ayurveda texts mentioned different types of drugs as source of calcium to full fill the need of element in children. Considering these all aspects present article summarizes the role of calcium supplement in children as per Ayurveda.

KEYWORDS: *Ayurveda, Calcium, Supplement, Absorption.*

INTRODUCTION

Calcium as biological element helps in muscle contraction, support cell growth, control exocrine and endocrine secretions, transports fluids and acts as biological ion. The major portion of calcium found in bones, teeth and some calcium also found in blood and extracellular fluid, etc. Calcium along with phosphoric acid provides rigidity to the skeleton. Normally in human plasma calcium ranged from 8.5 to 10.4 mg/dL, the recommended dietary intake of calcium for different age groups is as follows^[1]

- ✚ 200 mg/day for adolescents and adults up to age 24
- ✚ 800 mg/day for older adults.
- ✚ Children 1 to 3 years need 700 mg of calcium/day.
- ✚ Children 4 to 8 years need 1,000 mg of calcium/day.

The calcium ions are responsible for many physiological activities as mentioned follows:

- ✓ Calcium ions facilitate neuronal excitability
- ✓ Control muscle contraction
- ✓ Facilitate release of neurotransmitter and hormones
- ✓ Maintenance of membrane integrity and permeability
- ✓ Facilitate signal transduction

- ✓ Helps in enzyme function and involve in blood coagulation.
- ✓ It suppresses loss of bone in postmenopausal women thus reduces premenstrual syndrome.
- ✓ It also prevents chances of chronic hypertension.
- ✓ Calcium salts correct calcium deficiency in osteoporosis.

Ayurveda text (*Charka Samhita*) mentioned uses of calcined *Mukta, Sankha, Pravala* and *Vanshalachana* for the management of various diseases and maintenance of general wellness.^[2-6] The drugs obtained from mineral origin mainly used for the sources of elements (calcium), Ayurveda described these drugs under the heading of *Parthivadrayayas* which is one of the classes of drug amongst the three categories as depicted in **Figure 1**.

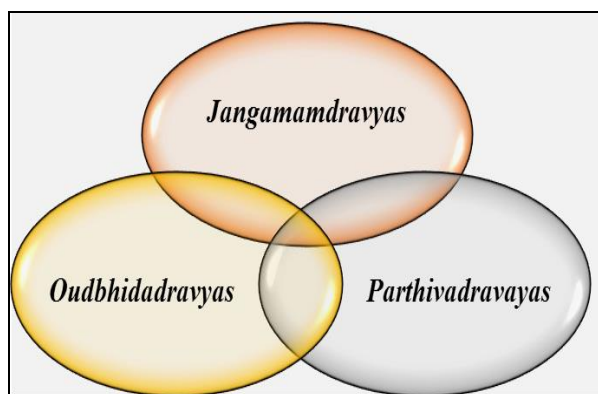


Figure 1: Types of drugs used in Ayurveda based on their origin.

As depicted in Figure 1, *Jangamadravyas* obtained from the animal origin, *Oudbhidadravyas* drugs obtained from the plant origin and *Parthivadravyas* obtained from the mineral origin. The *Parthivadravyas* drugs obtained from the mineral origin mainly used as sources of elements, metal or ions. Some drugs belong from this category recommended as source of calcium and discussed in detail in the ancient texts of *Rasasatra*.

Drugs rich in calcium are grouped as *Sudha vargadravyas*, *Sudha* included under *Parthivadravyas* in *Caraka Samhita* and *Susrutha Samhita*. *Rasamritam* mentioned some group of drugs as *Sudha vijnaneeya*, while in *Rasarnava* and *Rasa Ratnakar*, *Suklavarga* is mentioned instead of *SudhaVarga*. As per the various textbooks of *Rasasastra* there are eighteen drugs in this category and amount of calcium in herbal drugs was also elaborated in various Ayurveda texts.^[7-9]

Ayurvedic perspective on calcium deficiency in children

Ayurveda deals with different dietary aspect of children, the calcium deficiency symptoms manifested as *Vata dosha vridhilakshana* and *Asthi dhatu kshayalakshana*. *Vatadosha* vitiation affects movements and action in the body, the calcium deficiency may leads *Vata* aggravation which further produces pain sensations like twitching, aching, contractions, catching, pricking and numbness, etc. The insufficiency of calcium also causes pain in the muscular and skeletal systems, numbness and abnormal growth of bone in children, etc. Medical science described following types of pediatric disorders associated with calcium deficiency.

- *Balashosha*
- Dental eruptions
- *Asthimridita*
- *Balashosha*
- *Pandu roga*

Calcium is mainly contributed towards the formation of skeletal system and *Asthidhatu*, it also associated with the teeth. In children calcium deficiency causes *Asthi dhatu kshaya*, cracking of teeth and loss of bone matter. In this regards Ayurveda suggested uses of various

materials as sources of calcium or calcium supplement.^[9-12]

Calcium Supplement

There three specific category for which calcium supplement may be recommended in children, these diseases treated requiring calcium supplementation fall in following categories.

- ✓ Drugs used as supplement to overcome calcium malabsorption by increasing diffusion process.
- ✓ Calcium is used to form complex with some ions, in renal problems, however this condition rarely seen in children.
- ✓ Drugs used as supplement in case of insufficient calcium intake.

There are many natural compounds which contains calcium as chief ingredients as used as calcium supplement, these includes; *Sudha*, *Khatika*, *Samudraphena*, *Shankha*, *Kapardika*, *Shukti*, *Kurmapristha*, *Sadharana Rasa* and *Ratna Varga Dravya*, etc.^[11-14]

Godanti Bhasma

It works effectively in rickets which is disorder of calcium deficiency and helps in *Jirnajwara* and *Kasa* in children. It is recommended with honey or cow *ghee*.

Kurmapristha Bhasma

It recommended in *Bala-rogas* with *Guduchi Satva* as adjuvant. It gives strength to the bones in children.

Kukkutanda Twak Bhasma

It used as a rich source of calcium and considered useful for *Balashosha*, dental eruptions, it is used with honey and cow *ghee*.

Shringa Bhasma

Provides strength to bone, cartilages and it is used along with *Khanda Sharkara*.

Ajasthi Bhasma

It indicated in rickets in children suffering from calcium deficiency, useful for pre-natal period, dental eruptions and prevents dental carries as natural supplement of calcium.

Pravala pishti

It is considered useful in children for the therapeutic management of *Asthimridita*.

Churnodaka

It is mainly used in *Dantodbhedajanitarogas* of children, *Churnodaka* also correct the process of digestion. It also helps to cures *Udara shoola* and *Grahaniroga*. It also used for *Basti Karma* to clear the intestinal worms.

Sudhashataka Yoga

It contains *Pravala Bhasma*, *Shankha Bhasma*, *Kapardika Bhasma*, *Mukta Bhasma* and *Godanti*

Bhasma, etc. It is considered useful for *Balashosha* in children.

Balanchabhadra Churna

It is beneficial in cases of *Pandu roga*, *Balashosha* and *Jirna Jwara*, mainly used for the condition of calcium deficiency; it is licked with honey and cow milk as adjuvant.

Muktadi vati

It offers benefits in *Balashosha* and *Pandu* in children, used along with cow milk or mother milk.

Shuktadi Yoga

It contains *Shukti Bhasma*, *Yashada Bhasma* and *Godanti Bhasma*, it provides highest calcium supplementation.^[12, 14-16]

Advantages of Ayurveda calcium supplements

- ✓ These drugs provide calcium in absorbable form
- ✓ Acts as natural source of calcium thus avoid complication associated with modern drugs
- ✓ Safe, nontoxic, cost effective and available easily
- ✓ Wide ranges of choices available since many natural or compound formulations are available in Ayurveda as sources of calcium.
- ✓ Natural supplements cover many diseases associated with calcium deficiency.
- ✓ They also contain other elements thus supply nutrients and ions needed for physiological activities.
- ✓ The natural or Ayurveda calcium supplement help to correct abnormalities of gut and reduces acidity.

Probable mode of therapeutic action

Utilization of calcium salts as indicated by medical science is to forestall or address lack of calcium deficiency, these compounds acts as an acid neutralizer, also cure gastrointestinal colic and hyperkalemia. In age-related calcium malabsorption, the first and second categories of calcium supplements are utilized. As the correction of *Asthi dhatu kshaya* occurs the *Sampraptivighatana* can be achieved to prevent conditions like rickets. The calcium supplement nourishes bone and provides strength to the muscle thus breaking the cycle of pathogenesis of diseases associated with calcium insufficiency and muscular fatigue in children. Treatment of *Asthi kshaya* in children is achieved by preventing *Vataprakopa* and *Dhatu kshaya*.

The majority of the calcium-rich herbal drugs or medicinal plants contain *Snigdha Guna*, *Tikta Rasa* and *Katu* property. These properties cause *Strotoshodhak* effect, which influences *Margavarana* and prevent obstruction in nutritional supply. The *Sheetaveerya* of calcium-rich *Parthivadavyas* offers *Vishaghna*, *Chakshushya*, *Grahi*, *Deepana* and *Pachana* effects thus these *Dravyas* not only maintain supply of element (calcium) but also manage digestive and metabolic activities in children thus helps in overall nutritional

supply. Natural calcium supplement can also used to treat conditions like *Amlapitta* and *Parinamasula* in children.^[15-17]

CONCLUSION

Ayurveda *Dravyas* which mainly obtained from mineral origin encompass all of the elements including calcium thus served as great source of calcium. Some Ayurveda drugs acquired remedial significance as supplement in lack of calcium, to upgrade normal development in growing children. Calcium supplement offers many health benefits in kids and helps to manage many diseases associated with calcium deficiency. Calcium-containing medications not only used as calcium supplement but also helps to treat conditions like *Jwara*, *Raktapitta*, *Swasa*, *Kasa*, *Amla Pitt* and *Parinamasoola* in children. Ayurveda calcium supplements are available in a variety of dosage forms, have an adjuvant and a fixed dose to ensure proper absorption. The natural calcium supplement can be used in children to prevent and treat conditions like; *Asthi dhatu kshaya*, cracking of teeth, *Balashosha* and *Pandu*, etc.

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