

## ROLE OF TAKRA (BUTTERMILK) IN THE PREVENTION OF OSTEOPOROSIS AND OSTEOPENIA IN KNOWN CASES OF GRAHANI: A REVIEW

<sup>\*1</sup>Dr. Lajja Mangrola, <sup>2</sup>Dr. Kalpana Satpute

<sup>1</sup>PG-Scholar, Department of Kayachikitsa, D. Y. Patil University School of Ayurveda, Nerul, Navi Mumbai.

<sup>2</sup>Associate Professor, D. Y. Patil University School of Ayurveda, Nerul, Navi Mumbai.

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### \*Corresponding Author

**Dr. Lajja Mangrola**

PG-Scholar, Department of  
Kayachikitsa, D. Y. Patil University  
School of Ayurveda, Nerul, Navi  
Mumbai.



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### ABSTRACT

Grahani Roga is a chronic gastrointestinal disorder characterized by impairment of Agni resulting in defective digestion, absorption, and assimilation of nutrients. Persistent Agni Dushti leads to formation of Ama, Srotorodha, and Dhatu Kshaya, ultimately affecting Asthi Dhatu and predisposing individuals to osteopenia and osteoporosis.<sup>[1,2]</sup> Ayurveda emphasizes the physiological relationship between Purisha Dhara Kala and Asthi Dhara Kala, suggesting a close association between gut health and bone metabolism. Takra is widely described in Ayurvedic classics as an effective therapeutic dietary preparation in Grahani due to its Deepana, Pachana, Grahi, and Tridosha-balancing properties.<sup>[3,4]</sup> Takra possesses Madhura, Amla, and Kashaya Rasa and acts as a natural probiotic capable of improving gut microbiota, enhancing nutrient absorption, reducing systemic inflammation, and promoting tissue nourishment. Recent scientific evidence

also highlights the role of probiotics and fermented dairy products in improving bone mineral density through modulation of the gut bone axis.<sup>[5-10]</sup> This review article aims to critically analyze the role of Takra in prevention of osteopenia and osteoporosis in patients suffering from Grahani by integrating Ayurvedic principles with modern scientific concepts.

**KEYWORDS:** Takra, Grahani, Osteoporosis, Osteopenia, Gut–Bone Axis, Agni, Ama, Probiotics, Ayurveda.

## INTRODUCTION

Grahani Roga is one of the major disorders described in Ayurveda involving dysfunction of Agni. Grahani is considered the seat of Agni and plays an important role in digestion, absorption, and assimilation of food.<sup>[1]</sup> According to Ayurveda, proper nourishment of Dhatus depends upon healthy Agni. Any disturbance in Agni results in incomplete digestion and formation of Ama, which acts as the root cause of several systemic disorders.

Clinically, Grahani is characterized by Muhurbaddha Muhurdrava Mala Pravritti, indigestion, anorexia, abdominal pain, bloating, fatigue, and malabsorption. The disease shows considerable similarity with irritable bowel syndrome (IBS) and chronic malabsorption syndromes described in modern medicine.

Ayurveda establishes a close relationship between Purisha Dhara Kala and Asthi Dhara Kala, indicating that gastrointestinal dysfunction directly affects bone tissue metabolism.<sup>[2]</sup> Chronic digestive impairment causes defective absorption of calcium, magnesium, phosphorus, and vitamin D, leading to progressive reduction in bone mineral density and increased susceptibility to osteopenia and osteoporosis.

Takra is extensively recommended in Ayurvedic literature for management of Grahani and related gastrointestinal disorders.<sup>[3,4]</sup> Due to its probiotic nature and Deepana–Pachana properties, Takra helps restore digestive balance, improve gut microbiota, reduce Ama formation, and facilitate nutrient assimilation.

Modern studies have increasingly recognized the importance of the gut–bone axis, where gut microbiota regulate bone metabolism through immune modulation, inflammatory cytokines, endocrine pathways, and mineral absorption.<sup>[5,6]</sup> Therefore, Takra may have a significant role in prevention of osteopenia and osteoporosis associated with chronic Grahani.

## AIMS AND OBJECTIVES

1. To review the role of Takra in prevention of osteopenia and osteoporosis in patients suffering from Grahani Roga.
2. To understand the gut–bone axis from Ayurvedic and modern scientific perspectives.
3. To evaluate the effect of Takra on digestion, gut microbiota, and bone metabolism.





- Arsha
- Pandu
- Kaphaja disorders
- Srotorodha

## **ROLE OF TAKRA IN GUT HEALTH**

Takra exerts multiple beneficial effects on gastrointestinal physiology.

### **Restoration of Gut Microbiota**

Takra contains probiotic organisms such as Lactobacillus and Bifidobacterium which restore intestinal microbial balance and suppress pathogenic bacteria.

### **Improvement of Agni**

Its Deepana and Pachana properties stimulate digestive enzymes and improve gastrointestinal motility.<sup>[3]</sup>

### **Reduction of Ama**

By improving digestion, Takra prevents Ama formation and minimizes metabolic toxicity.

### **Enhancement of Nutrient Absorption**

Takra strengthens intestinal mucosa and improves absorption of calcium, magnesium, and vitamins essential for bone health.<sup>[5,8]</sup>

### **Anti-inflammatory Action**

Probiotic activity reduces inflammatory mediators responsible for chronic intestinal and systemic inflammation.<sup>[7,8]</sup>

## **ROLE OF TAKRA IN BONE HEALTH**

Takra significantly contributes to bone metabolism through several mechanisms.

### **Improved Mineral Bioavailability**

Fermented dairy products improve calcium and magnesium absorption necessary for bone mineralization.<sup>[10]</sup>

### **Reduction in Bone Resorption**

Reduction of inflammatory cytokines decreases osteoclastic activity and prevents excessive bone loss.<sup>[7]</sup>

### **Production of Short-Chain Fatty Acids**

SCFAs produced by probiotic bacteria improve mineral absorption and osteoblastic activity.<sup>[5,6]</sup>

### **Support of Asthi Dhatu**

Ayurvedically, Takra nourishes Asthi Dhatu through proper digestion and Dhatu Poshana.

A recent meta-analysis reported.

“Probiotic supplementation significantly increased lumbar spine BMD.”<sup>[8]</sup>

Another review concluded that.

“Fermented dairy products improve bone health.”<sup>[10]</sup>

These findings support the therapeutic utility of Takra in prevention of osteoporosis and osteopenia.

### **DISCUSSION**

Chronic gastrointestinal dysfunction has a profound impact on skeletal health due to defective digestion, malabsorption, and systemic inflammation. Persistent Agni Dushti in Grahani leads to Ama accumulation, impaired Dhatu nourishment, and Asthi Kshaya.

Takra provides multidimensional therapeutic benefits by correcting Agni, restoring gut microbiota, reducing inflammation, and improving nutrient assimilation.

Modern evidence demonstrates that probiotics regulate immune responses, reduce inflammatory mediators, and enhance calcium absorption.<sup>[5,7,8]</sup> Fermented dairy products also improve osteoblastic activity and preserve bone mineral density.<sup>[10]</sup>

The Ayurvedic concept of Purisha Dhara Kala and Asthi Dhara Kala closely correlates with the modern concept of the gut–bone axis. Takra, therefore, acts both as a therapeutic and preventive dietary intervention in Grahani-associated osteoporosis and osteopenia.

### **CONCLUSION**

Takra plays an important role in maintaining gastrointestinal and skeletal health through its Deepana, Pachana, Grahi, probiotic, and anti-inflammatory properties.

By correcting Agni, preventing Ama formation, improving gut microbiota, and enhancing mineral absorption, Takra supports Asthi Dhatu nourishment and helps prevent osteopenia and osteoporosis associated with chronic Grahani.

The therapeutic significance of Takra can be understood through both Ayurvedic principles and modern scientific evidence related to the gut–bone axis. Therefore, Takra may be considered an effective, economical, and easily available dietary adjunct in management and prevention of Grahani-associated bone disorders.

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