

## GUNA BASED HOMEOSTASIS IN STHAULYA AND SANDHIGATAVATA-AN AYURVEDIC PHYSIOLOGICAL PERSPECTIVE

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### ABSTRACT

The global increase in obesity and osteoarthritis poses a significant health burden. These conditions share interlinked pathophysiological mechanisms involving genetic, inflammatory, and metabolic disruptions. Ayurveda identifies this dual pathology as *Sthaulya* and *Sandhigataavata*, rooted in *Dhatvagni Vaishamya* affecting *Meda* and *Asthi dhatus*. Excess *Guru-Snigdha-Sheeta* (heavy, unctuous, cold) *Gunas* contribute to their manifestation. Ayurvedic interventions based on *Laghu* (light), *Ruksha* (dry), and *Ushna* (hot) *Gunas* are considered effective in restoring balance. This conceptual study proposes dietary, lifestyle, and therapeutic interventions emphasizing *Laghu-Ruksha-Ushna Gunas* to counteract the causative *Gunas* of obesity and osteoarthritis. Key strategies include the use of *Laghu-Ruksha-Ushna* dominant foods and *Lekhana Basti* prepared with herbs possessing these *Gunas*. A thorough review of Ayurvedic classical literature,

scientific journals, and research databases will support the framework. The framework anticipates that *Laghu-Ruksha-Ushna Guna*-based interventions will enhance *Agni*, correct metabolic imbalance, reduce *Strotorodha* (channel obstruction), and mitigate inflammation and joint degeneration. These therapies aim to restore *Dhatvagni* function and modulate *Kapha-Meda* accumulation in obesity-associated osteoarthritis. This study highlights the therapeutic potential of *Laghu-Ruksha-Ushna Gunas* in addressing the core pathogenesis of obesity and osteoarthritis. Integrating Ayurvedic interventions with modern biomedical

insights offers a holistic and preventive model. The proposed approach could serve as a foundation for future research addressing this co-morbidity, which continues to rise in today's sedentary, adulterated lifestyle era.

**KEYWORDS:** *Laghu Guna, Ruksha Guna, Ushna Guna*, Obesity, Osteoarthritis.

## INTRODUCTION

Obesity, a major public health concern all over the world is a chronic and multifactorial lifestyle disorder characterized by abnormal or excessive accumulation of body fat, it is not merely a cosmetic issue but a precursor to several degenerative and inflammatory conditions. Among these, osteoarthritis (OA)—particularly of the weight-bearing joints such as the knees and hips—has shown a strong correlation with obesity due to both mechanical overload and systemic metabolic dysregulation.<sup>[1]</sup> A study by Coggon et al has reported that Obesity significantly increases the risk of knee osteoarthritis, with a BMI  $\geq 36$  kg/m<sup>2</sup> raising the risk by 13.6 times. Weight reduction by just 5 kg could prevent up to 24% of surgical knee OA cases.<sup>[2]</sup> Several studies exploring the concomitant relationship between obesity and osteoarthritis have shown that while both mechanical stress and systemic factors play a role, obesity-induced mechanical stress emerges as the most significant risk factor for knee osteoarthritis.<sup>[3]</sup> Excessive inflammatory stress on weight bearing joints in obese individuals plays a crucial role in triggering and maintaining an inflammatory milieu, ultimately leading to gradual degeneration of articular cartilage. Moreover, adipose tissue acts as an active endocrine organ by releasing adipokines that significantly contribute to systemic inflammation and joint degradation. Emerging evidence also highlights the influence of genetic susceptibility and irregular lifestyle patterns in the development of this complex co-morbidity. Current conventional therapeutic strategies for obesity-associated osteoarthritis primarily aim at symptom control through dietary modifications, structured physical activity, pharmacological agents such as analgesics and anti-inflammatory drugs. This article explores the relevant ayurvedic concepts including possible pathogenesis of *Sthaulya* and *Sandhigataavata* which highlight the role of *Gunas* and *Vyadhi Sankara ghatakas* as well as ayurvedic therapeutic approaches highlighting the role of *Gunas* will also be illustrated.

## AIM AND OBJECTIVES

To study and understand the association of *Gunas* in the pathogenesis of *Sthaulya* and *Sandhigataavata*.

## MATERIALS AND METHODS

Only textual materials have been utilized for this study, from which various references have been gathered. The main Ayurvedic texts employed in this study include *Charaka Samhita*, *Sushruta Samhita*, *Ashtang Hridaya*, and the available commentaries on them. Additionally, modern texts, related journals and websites have been reviewed for supplementary information.

## PATHOPHYSIOLOGY OF *STHAULYA* AND *SANDHIGATAVATA*

Ayurvedic Classics explain the role of excessive intake of *Guru-Snigdha-Sheeta Guna* dominant *Ahara Dravyas*, along with sedentary lifestyle, psychological, and hereditary factors in the *Samprapti* of *Sthaulya*. These factors aggravate *Kapha Dosha*, suppress *Jatharagni* and *Meda-Dhatvagni*, resulting in the formation of *Ama* (toxic metabolic by-products), which in turn vitiate and increase *Meda Dhatu* (adipose tissue), causing *Srotorodha* (channel obstruction). This obstruction disrupts *Vata Dosha*, which enhances appetite (resetting satiety mechanisms) and further vitiates other *Dhatus*, leading to systemic metabolic disorders.

*Sandhigataavata* manifests when aggravated *Vata Dosha* particularly due to *Dhatukshaya* (tissue depletion) or *Margavarodha* (channel obstruction) disrupts the physiological *Asthi Dhatu*. The disruption of *Asthi Dhatvagni* hampers proper nourishment and regeneration of bone and cartilage, resulting in progressive degeneration of joint structures. When this pathological process co-exists with *Ama*, the condition evolves into *Sama-Sandhigataavata*, representing a complex interplay of immune response and tissue-breakdown. The co-occurrence of this disorder with *Sthaulya* underscores the significance of *Guru, Snigdha* and *Sheeta Ahara-Vihara*, metabolic imbalances, and a disturbed *Dosha-Dhatu-Guna* synergy, ultimately accelerating the pathogenesis of obesity-associated osteoarthritis. This concomitant pathology also could be explained through a unique concept explained in Ayurvedic texts known as *Vyadhi Sankara*. As elaborated in the texts, *Dhatu Poshan Nyayas* like *Ksheerdadhi-Khalekapota-Kedarikulya Nyayas* explain the transformational development of dhatus. In context to above development the concerned *Dhatus* namely *Meda* and *Asthi* are malformed as they are one after the other in the *Sapta Dhatu* sequence, leading to the development of this comorbidity.

Modern researches have also proved the mesenchymal stem cells of bone, cartilage and adipose tissue are similar.<sup>[4]</sup>

The *Samprapti Chakra* of these co-morbid conditions centers on the dynamic influence of *Gunas* in provoking both *Doshas* and *Dushyas*, eventually resulting in *Dosha-Dushya Sammurchhana*. In the context of *Sthaulya*, *Acharya Sushruta* describes that the *Snigdha Amsha* of *Madhura Amaja Anna Rasa* contributes to *Medo Vriddhi* at the expense of other *Dhatus*, culminating in excessive corpulence. This *Amaja Anna Rasa* also plays a critical role in initiating the *Margavarodha Janya Samprapti* of *Sandhigata Vata*, wherein the aggravated *Ruksha* and *Chala Gunas* of *Vata* damage the joint structures (*Sandhi Hanana*), leading to the manifestation of *Sama-Sandhigatavata* (Osteoarthritis).<sup>[5]</sup>

### AYURVEDIC INTERVENTION FRAMEWORK

The foundational idea of *Samprapti Vighatan* (reversal of pathogenesis) is at the heart of Ayurveda's three-fold management philosophy, which is *Daivavyapashraya*, *Yuktivyapashraya*, and *Satvavajaya Chikitsa*. The most frequent concept among these is the *Yuktivyapashraya Chikitsa*, which combines *Sanshamana*, *Sanshodhana*, and *Rasayana Chikitsa* to restore homeostasis to the roots of the human body (*Dosha-Dhatu-Mala*). The *Gurvadi Gunas* here again play a comprehensive role in breaking the pathophysiology, regardless of whether any of the therapeutic principles indicated above are used. Dietary changes are another crucial component of management; without them, no therapeutic intervention is complete. Modern therapy approaches have demonstrated the effectiveness of non-pharmaceutical interventions in the treatment of obesity and osteoarthritis as adjuncts to mainstream care.<sup>[6]</sup>

#### The structured management including the dominant *Gunas*<sup>[7]</sup>

Aspect	Obesity ( <i>Sthaulya</i> )	Osteoarthritis ( <i>Sandhigatavata</i> )	Dominant <i>Gunas</i> Involved
<b>Sanshodhana Chikitsa</b>	- <i>Vamana</i> , <i>Virechana</i> , <i>Lekhana Basti</i> - <i>Udvartana</i> (dry massage), <i>Parisheka</i> , <i>Snana</i>	- <i>Basti</i> (Matra & <i>Lekhana</i> ), <i>Swedana</i> , <i>Agnikarma</i> , <i>Jalaukavacharana</i> , <i>Lepa</i>	<b><i>Laghu</i>, <i>Ruksha</i>, <i>Ushna</i></b>
<b>Sanshamana Chikitsa</b>	<i>Triphala Guggulu</i> , <i>Medohara Guggulu</i> , <i>Navaka Guggulu</i> , <i>Vidangadi Yoga</i> - <i>Arogyavardhini</i> , <i>Chandraprabha Vati</i>	- <i>Lakshadi Guggulu</i> , <i>Dashamoolarishta</i> , <i>Gokshuradi Guggulu</i> , <i>Rasnadi Kwatha</i> , <i>Chandraprabha Vati</i>	<b><i>Laghu</i>, <i>Ruksha</i>, <i>Ushna</i></b>
<b>Dietary Interventions</b>	- <i>Takrarishta</i> , <i>Kulattha</i> , <i>Yava</i> , <i>Shashtika Shali</i> , <i>Ragi</i> , <i>Patola</i> , <i>Honey with</i> <i>warm water</i>	- Avoid <i>Tikta</i> , <i>Kashaya</i> , <i>Ruksha</i> foods - Use <i>Snigdha</i> , warm, fresh meals - Avoid stale, dry,	Obesity: <b><i>Laghu</i>- <i>Ruksha</i>-<i>Ushna</i></b> OA: <b><i>Snigdha</i>-<i>Ushna</i></b> (locally)

		astrigent foods	
<b>Lifestyle (Vihara)</b>	- Vyayama (regular exercise), early rising, avoid day sleep	- Joint mobility exercises, yoga, warm oil applications	Shared emphasis on <b>Laghu-Vihara</b>

## DISCUSSION

The concept of *Guna*, rooted in both philosophical and Ayurvedic traditions, serves as a vital bridge between theoretical understanding and clinical application. Philosophically, *Gunas* are perceived as intrinsic attributes of matter—non-causal, passive, and dependent on substances for expression described by *Vaisheshika* and *Samkhya Darshanas*.<sup>[8]</sup>

Ayurveda builds upon the philosophical foundation of *Gunas* by organizing them into practical categories that directly influence physiological balance and disease progression. In conditions like *Sthaulya* (obesity) and *Sandhigataavata* (osteoarthritis), predominance of *Guru*, *Snigdha* and *Sheeta Gunas* plays a pivotal role in the development of pathology by impairing *Agni*, encouraging *Ama* formation, and obstructing *Srotas*. In contrast, *Laghu*, *Ruksha*, and *Ushna Gunas* are intentionally applied in Ayurvedic management as means of *Samprapti Vighatana*—the reversal of pathogenesis. In contrast, *Snigdha Guna*—while contributory to *Sthaulya*—has a protective role in *Sandhigataavata*, where it is required to lubricate and nourish the *Asthi* and *Sandhi*, thus preventing further degeneration. This selective and context-specific application of *Gunas* reflects the precision and depth of Ayurvedic therapeutic principles in managing interconnected conditions like obesity and osteoarthritis.

## CONCLUSION

The global rise in the comorbidity of obesity and osteoarthritis is closely linked to lifestyle transitions driven by rapid urbanization. This dual condition involves key tissue systems such as *Meda Dhatu* and *Asthi-Sandhi*, both of which are affected by chronic low-grade inflammation and progressive cellular aging. If we look upon the Ayurvedic point of view, *Gunas* are the major contributors in the pathogenesis of a disease or co-morbidities. The concept of *Guna* forms a vital link between *Hetu*, *Linga*, and *Aushadha*. Diseases manifest due to the dominance of certain *Gunas* in etiological factors, and their symptoms reflect the same qualitative imbalance. Conversely, the efficacy of Ayurvedic interventions is rooted in the application of opposite or balancing *Gunas* through *Aushadha*, *Ahara*, and *Vihara*. In the management of *Sthaulya* and *Sandhigataavata*, the strategic use of *Laghu*, *Ruksha*, and *Ushna Gunas* demonstrates the precision of Ayurvedic principles in reversing the *Samprapti* and restoring *Dosha-Dhatu* equilibrium. Thus, a *Guna*-based approach offers a foundational and

integrative path in the holistic treatment of modern co-morbidities like obesity and osteoarthritis.

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