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A CRITICAL REVIEW ON LANGHANA: AYURVEDIC DETOXIFICATION TO METABOLIC REGULATION

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ABSTRACT

Langhana Upavasa (therapeutic fasting) is among the most significant interventions described in classical Ayurvedic texts for restoring metabolic balance and promoting detoxification. The present review critically explores the principles of *Langhana* as stated in the *Brihattrayi* and *Laghutrayi*, highlighting their indications, modes of action and relevance in conditions characterized by excess *Kapha*, *Meda*, *Ama*, and diminished *Agni*. These foundational concepts provide a framework for understanding their application in contemporary metabolic disorders. Metabolic disorders—including obesity, type 2 diabetes, dyslipidemia, and metabolic syndrome—are increasingly prevalent due to sedentary lifestyles and improper dietary habits. From an Ayurvedic perspective, these conditions correlate with *Kapha-Meda vriddhi*, *Agnimandya*, *Ama utpatti*, and impaired *Dhatvagni*, resulting in disturbances in energy utilization and storage. This review outlines the Ayurvedic pathological pathways of metabolic dysfunction and examines how *Langhana* address these imbalances by enhancing digestive power, reducing metabolic load, promoting toxin clearance, and facilitating normalization of tissue metabolism. The discussion further integrates modern scientific evidence demonstrating the physiological effects of fasting—such as improved insulin sensitivity, enhanced fat oxidation, metabolic switching, autophagy activation, modulation of gut microbiota, and reduction of

inflammatory markers. Clinical and experimental studies evaluating *Langhana* or structured fasting protocols in obesity, hyperlipidaemia, and diabetes are critically analysed to establish their therapeutic relevance. This review concludes that *Langhana* when guided by classical principles and tailored to individual needs, offer promising, safe, and holistic strategies for managing metabolic disorders. However, further standardized clinical research is essential to validate these traditional practices within modern healthcare frameworks.

KEYWORDS: *Langhana*, *agni*, *Ama*, Metabolic disorders.

INTRODUCTION

Langhana, described in classical Ayurvedic literature as a prime therapeutic modality involving lightening, reduction, and metabolic optimization, has traditionally been recommended for conditions arising from excessive *Kapha*, impaired *Agni* and *Ama* accumulation. In the context of contemporary health challenges, metabolic disorders such as obesity, type-2 diabetes, dyslipidaemia, and metabolic syndrome have emerged as major public health concerns worldwide. Recent estimates suggest that metabolic syndrome affects a large proportion of the adult population, with prevalence rates rising globally and related cardio metabolic components such as central obesity, hypertension, dyslipidaemia, and hyperglycaemia showing increasing trends across diverse regions and age groups. Type-2 diabetes alone affects hundreds of millions of adults globally, and its prevalence has doubled over recent decades, largely propelled by sedentary lifestyles, calorically dense diets, and urbanization.[1] Similarly, dyslipidaemias and obesity contribute significantly to the growing burden of non-communicable diseases, with global estimates indicating high rates of abnormal lipid profiles and adiposity in adult populations.

From an Ayurvedic perspective, these disorders reflect a disturbance in metabolic homeostasis characterized by *Agnimandya* (diminished digestive and metabolic fire), *Kapha-Meda vriddhi* (accumulation of fat and bodily fluids) and *Ama* (toxic metabolic residue). Conditions such as *Sthaulya* (obesity), *Madhumeha* (diabetes), and associated *Ama pradoshaja* illustrate classical parallels to modern metabolic dysfunction. Recognizing this, *Langhana* and its variant *Upavasa* (therapeutic fasting) are postulated to restore *Agni*, reduce metabolic burden, mobilize excessive *Meda*, and facilitate detoxification, thus addressing the pathophysiological core of metabolic disorders.

This review critically examines the foundational principles of *Langhana* and *Upavasa* in classical texts, correlates Ayurvedic pathogenesis with modern metabolic disease frameworks, and evaluates contemporary evidence on their efficacy in metabolic regulation.

OBJECTIVES

1. To review the classical Ayurvedic principles and therapeutic rationale of *Langhana* and *Upavasa* in metabolic disorders.
2. To analyse clinical and scientific evidence on the effectiveness of *Langhana* and *Upavasa* in conditions like obesity, dyslipidaemia, and metabolic syndrome.

MATERIAL AND METHODS

This review was conducted by analysing classical Ayurvedic texts for principles of *Langhana* and *Upavasa*, and by searching modern scientific literature in databases like PubMed, Google Scholar, and ScienceDirect using keywords such as "*Langhana*," "*Upavasa*," "obesity," "diabetes," and "dyslipidaemia." Relevant peer-reviewed articles, clinical trials, and review papers in English were included to correlate Ayurvedic concepts with modern understanding of metabolic disorders.

Classical References of Langhana in Ayurvedic Literature

Charaka Samhita highlights *Langhana* as a *Shodhana* and *Shamana* therapy that balances *Kapha* and strengthens digestive fire (*Agni*), particularly in conditions like *Sthaulya* (obesity), *Meda Vriddhi*, and Prameha (diabetes).[2]

Sushruta Samhita describes *Langhana* as a therapeutic modality for reducing excessive body mass and metabolic toxins (*Ama*), and emphasizes its role in improving tissue metabolism (*Dhatvagni*).[3]

Ashtanga Hridaya elaborates on the methods of *Langhana*, including light diet, fasting, and lifestyle modifications, for conditions with *Kapha-Meda* vitiation and impaired digestion.[4]

Sharngadhara Samhita also mentions *Langhana* as a preparatory or adjunctive therapy to enhance the efficacy of other interventions, particularly in metabolic and degenerative disorders.

Metabolic disorders

Metabolic disorders, including obesity, type 2 diabetes mellitus, dyslipidaemia, and metabolic syndrome, are increasingly prevalent worldwide. The World Health Organization (WHO) estimates that over 1.9 billion adults are overweight, and more than 450 million suffer from diabetes globally.[5] These conditions are major risk factors for cardiovascular diseases, non-alcoholic fatty liver disease, and other non-communicable diseases. The pathophysiology of metabolic disorders involves excess adiposity, insulin resistance, impaired lipid metabolism, chronic low-grade inflammation, and oxidative stress.

From an Ayurvedic perspective, these disorders can be correlated with *Santarpanottha Vyadhis*, a group of diseases arising from over-nourishment and sedentary lifestyle. Classical texts describe *Santarpana* (excessive intake of food or unwholesome diet) as the primary etiological factor for diseases such as *Sthaulya* (obesity), *Meda Vriddhi* (adipose accumulation), and *Prameha* (diabetes). Other contributing factors include diminished digestive fire (*Agnimandya*), accumulation of metabolic toxins (*Ama*), and imbalance of *Kapha* and *Meda doshas*.[6]

Role of *Langhana* in the Management of Metabolic Disorders

Langhana, described as one of the prime therapeutic interventions in Ayurveda, is primarily aimed at reducing excess *Kapha*, *Meda*, and *Ama*, and restoring optimal digestive and metabolic function (*Agni*). Given that metabolic disorders such as obesity, diabetes, dyslipidaemia and metabolic syndrome arise from over-nutrition, sedentary lifestyle, and impaired metabolism—concepts closely related to *Santarpanottha Vyadhis—Langhana* presents a logical and evidence-based approach for their management.

Mechanism in Ayurvedic Terms

Langhana works by reducing the metabolic load, enhancing *Agni*, facilitating *Ama* clearance and correcting the imbalance of *Kapha* and *Meda doshas*. It improves tissue metabolism (*Dhatvagni*) and promotes homeostasis, which is crucial in conditions like *Sthaulya*, *Prameha* and *Medovahasrotas* disorders.

Modern Scientific Correlation

Contemporary studies have demonstrated that fasting and caloric restriction, which are conceptually similar to *Langhana*, improve insulin sensitivity, promote lipolysis, reduce oxidative stress, modulate inflammatory markers, and enhance mitochondrial efficiency.

Structured *Langhana* protocols have been shown to reduce body weight, waist circumference, serum lipid levels, and blood glucose, indicating significant benefits in obesity, diabetes, and dyslipidaemia management.

DISCUSSION

Langhana, as described in classical Ayurvedic texts, has been widely advocated for managing *Santarpanottha Vyadhis*, which closely correlate with modern metabolic disorders such as obesity, diabetes, dyslipidaemia, and metabolic syndrome. Critical evaluation of contemporary research demonstrates that the therapeutic benefits of *Langhana* are not only consistent with classical principles but also supported by physiological and biochemical evidence.

1. **Metabolic Modulation:** Studies on intermittent fasting and caloric restriction, which are modern analogues of *Langhana*, show significant reductions in body weight, BMI, and visceral fat.[7] These interventions enhance lipolysis, promote fat oxidation, and improve insulin sensitivity, which directly counteracts *Meda vriddhi* and *Kapha* accumulation described in Ayurveda.
2. **Glycaemic Control:** Clinical trials in patients with type 2 diabetes demonstrate that fasting protocols reduce fasting blood glucose, HbA1c, and insulin resistance, mirroring the classical objective of restoring Agni and normalizing *Prameha*.[8]
3. **Lipid Regulation:** Research indicates that therapeutic fasting lowers total cholesterol, LDL, triglycerides, and improves HDL levels, supporting its role in correcting *Medovahasrotas dushti*.[9]
4. **Autophagy and Cellular Detoxification:** Experimental studies suggest that fasting activates autophagy, clears cellular debris, and reduces oxidative stress[10], which parallels the Ayurvedic concept of *Ama shodhana*.
5. **Inflammation and Hormonal Modulation:** Evidence shows reduction in pro-inflammatory cytokines and improvement in adipokine profile, contributing to systemic metabolic homeostasis.[11]

Overall, *Langhana* acts through multi-dimensional mechanisms—metabolic recalibration, detoxification, hormonal regulation, and tissue-level rejuvenation. While clinical evidence is promising, variations in fasting protocols, duration, and patient constitution necessitate individualized approaches. Standardized trials integrating Ayurvedic principles with modern

methodologies are required to optimize therapeutic efficacy and validate *Langhana* as a safe, evidence-based intervention for metabolic disorders.

CONCLUSION

Langhana, a classical Ayurvedic therapeutic intervention, demonstrates significant potential in the management of metabolic disorders such as obesity, diabetes, and dyslipidaemia. By restoring *Agni*, reducing *Kapha-Meda* accumulation, and facilitating Ama clearance, it addresses the pathophysiological core of *Santarpanottha Vyadhis*. Contemporary research supports its role in improving insulin sensitivity, lipid profiles, body weight, and inflammatory markers, highlighting a clear mechanistic overlap with classical principles. Integrating Langhana into modern metabolic management offers a safe, holistic, and cost-effective approach. Future standardized clinical trials and mechanistic studies are warranted to optimize protocols and further validate its therapeutic efficacy.

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