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A CRITICAL APPRAISAL OF LANGHANA AND BRIMHANA UPAKRAMA IN AYURVEDIC SAMHITAS WITH CLINICAL CORRELATION

[1]*Dr. Shubangi Dutt, [2]Dr. Ankita

[1]*PG Scholar, [2]HOD and Professor

Department of Ayurveda Samhita Siddhant, Government Ayurvedic Medical College, Jammu(Akhnoor), Mandrian, 181201.

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***Corresponding Author**

Dr. Shubangi Dutt

PG Scholar, Department of Ayurveda Samhita Siddhant, Government Ayurvedic Medical College, Jammu(Akhnoor), Mandrian, 181201.

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ABSTRACT

Langhana (therapeutic lightening) and Brimhana (nourishing enhancement) represent complementary therapeutic paradigms[1] in Ayurvedic practice that govern tissue metabolism, metabolic efficiency, and systemic balance. Langhana encompasses reducing therapies employed to diminish excessive tissue accumulation[2], rectify channel obstruction, and restore metabolic efficiency through mechanisms including appetite suppression, thermogenic activation, and accelerated energy mobilization. Conversely, Brimhana[3] comprises nourishing interventions intended to augment deficient tissues, reinforce weakened metabolic processes, and establish anabolic equilibrium through enhanced nutrient assimilation and systemic strengthening. This review synthesizes Ayurvedic classical principles[4] with contemporary physiological and molecular evidence, delineating the pharmacological mechanisms underlying both approaches, their tissue-specific applications across metabolic and systemic disorders, contraindication profiles, and clinical integration strategies.

KEYWORDS: Langhana, Brimhana, Complementary therapeutic paradigms.

INTRODUCTION

The therapeutic landscape of contemporary medicine increasingly confronts the challenge of managing metabolic dysregulation manifesting across obesity, nutritional insufficiency, muscle atrophy[5], and tissue degeneration. Epidemiological evidence documents that excessive adipose tissue accumulation, characterized by abdominal adiposity and dyslipidemia, correlates with systemic inflammation[6], hormonal dysregulation, and insulin resistance. Concurrently, malnutrition and age-related muscle loss accelerate functional decline and mortality risk.[7]

Ayurvedic medicine has long recognized that therapeutic success requires not uniform intervention but rather context-sensitive, tissue-specific treatment frameworks.[8] The classical dichotomy between Langhana (reduction) and Brimhana (nourishment) exemplifies this principle, offering a sophisticated classification system that addresses underlying metabolic dysfunction.[9] Langhana addresses pathological tissue accumulation and functional impairment, while Brimhana addresses tissue[10] insufficiency and metabolic weakness.

Modern biomedical research has provided substantial validation for these ancient conceptual frameworks.[11] This review integrates classical Ayurvedic scholarship with contemporary metabolic science to illuminate the mechanisms, clinical applications, and integration strategies of these opposing yet complementary therapeutic modalities.[12]

MATERIALS AND METHODS

Literature Sources and Search Strategy

A comprehensive narrative review was conducted to explore Langhana and Brimhana therapeutic principles from Ayurvedic and biomedical perspectives. Literature[13] sources included classical Ayurvedic texts including the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya, and contemporary peer-reviewed publications[14] from PubMed, Google Scholar, and ResearchGate databases published between 2015 and 2025.

Search keywords included Langhana, Brimhana, tissue metabolism, metabolic syndrome, obesity, cachexia, Ayurvedic therapeutics, and related terms.[15] Data extraction was performed manually by reviewing study objectives, mechanistic pathways, and outcomes relevant to metabolic balance and tissue-specific applications.

RESULTS

Conceptual Framework and Classical Definitions

Langhana, derived from Sanskrit meaning to make light, represents therapeutic strategies[16] designed to diminish excess tissue mass, dissolve metabolic blockages, and restore organismal lightness. Classical texts[17] delineate Langhana through therapeutic vectors including Rukshana (drying), Ushna (thermogenic heating), Tikshna (accelerated metabolism), Laghu (lightening), and Lekhana (scraping/mobilization[18]). These principles operate through shared mechanistic pathways: augmentation of digestive metabolic processes (Agni), mobilization of energy reserves, enhancement of elimination, and restoration of channel patency (Srotas).

Brimhana encompasses nourishing and tissue-augmenting modalities intended to replenish depleted tissues and strengthen compromised metabolic processes.[19] Characterized by Snigdha (oleaginous), Guru (heavy), Manda (sustained), and Balakara (strength-promoting) qualities, Brimhana[20] therapies enhance nutrient bioavailability, promote tissue synthesis, and stabilize hormonal signaling.

Dosha-Based Therapeutic Rationale

Langhana demonstrates efficacy in Kapha dosha aggravation and Meda Dhatu (adipose tissue)[21] excess. Kapha—embodying principles of mass, cohesion, and material substance—becomes pathological when excessive[22], manifesting as heaviness, sluggish metabolism, and channel obstruction. Elevated Kapha impairs Agni, culminating in incomplete catabolism and adipose accumulation.[23] Langhana restores efficiency through Kapha reduction and Agni invigoration.

Brimhana addresses tissue depletion and Vata dosha aggravation. Vata—governing tissue[24] degeneration and metabolic catabolism—becomes pathological in deficit, manifesting as tissue wasting[25] and systemic instability. Brimhana restores anabolic equilibrium and stabilizes Vata dysregulation through enhanced nourishment.

Physiological and Molecular Mechanisms

Langhana Mechanisms

Agni Deepana (digestive potentiation[26]). Langhana therapies function through amplification of digestive fire. Substances conferring Ushna and Tikshna qualities[27] enhance enzymatic function across metabolic pathways, augment mitochondrial oxidative capacity, and promote

lipolytic enzyme activity. Spices including black pepper, ginger, and chili contain bioactive alkaloids that function[28] as TRPV1 agonists and mitochondrial uncoupling agents, thereby increasing thermogenesis, reducing hepatic lipogenesis, and suppressing appetite-stimulating neurons.

Srotas Shuddhi (channel patency restoration[29]). Ama (metabolic endotoxins) from incomplete digestion and bacterial lipopolysaccharide translocation accumulates within tissue channels[30] and adipose depots, impeding nutrient diffusion and waste clearance. This pathophysiological state correlates with modern metabolic endotoxemia and adipose tissue inflammation.[31] Langhana therapies restore channel patency through enhanced hepatic detoxification, augmented epithelial tight junction integrity, fecal elimination of lipopolysaccharides, and mobilization of inflammatory mediators from adipose tissue for systemic clearance.

Medohara (fat metabolism augmentation). Langhana protocols incorporating fat-mobilizing and obesity-reducing properties function through upregulation of brown adipose tissue[32], enhancement of lipolytic enzyme activity, suppression of adipogenesis-associated transcription factors, and stimulation of thermogenic gene expression.[33] Phytochemical investigations of Langhana herbs including Triphala and Guggulu have documented bioactive constituents functioning as AMPK activators and SIRT1 agonists, thereby promoting lipid mobilization.

Brimhana Mechanisms

Dhatu Parinamana (tissue synthesis and maturation[34]). Brimhana therapies promote tissue synthesis through enhanced nutrient bioavailability and tissue-specific anabolic signaling. Substances conferring lipophilic.[35] sustained-release, and strength-promoting qualities enhance intestinal nutrient absorption through increased epithelial permeability and transporter expression. Classical Brimhana substances including sesame oil and ghee contain phytosterols and polyphenols that enhance insulin sensitivity, promote myogenic differentiation, and activate myostatin suppression and mTOR-dependent protein synthesis pathways.[36]

Ojas Promotion (systemic immunity and vitality). Ojas—the quintessential tissue product representing immune competence and vitality—becomes depleted through chronic disease, excessive exertion, or nutritional insufficiency.[37] Brimhana restoration[38] of Ojas functions

through establishment of dysbiosis-resistant microbial populations, promotion of regulatory T cell differentiation via short-chain fatty acid generation[39], augmentation of mucosal barrier function, and provision of immunonutrients. Brimhana substances enhance IL-10 and TGF-β production and suppress pro-inflammatory TNF-α and IL-6 signaling.

Clinical Applications

Langhana Applications

Sthoulya (obesity) and metabolic syndrome. Excessive adipose tissue accumulation, characterized by abdominal adiposity[40], dyslipidemia, and hypertension, represents the quintessential Langhana indication. Langhana protocols incorporating thermogenic herbs, hepatoprotective substances,[41] lipid-modulatory botanicals, and appetite-suppressant compounds demonstrate efficacy in reducing visceral fat, improving insulin sensitivity, and lowering inflammatory biomarkers.[42] Guggulu resin enhances hepatic conversion of cholesterol to bile acids, suppresses hepatic lipogenesis through SREBP inhibition, and promotes brown adipose tissue browning through increased UCP1 expression.

Prameha (diabetes) and glucose dysregulation. Langhana therapy[43] addresses tissue dysfunction in prediabetes and type 2 diabetes mellitus. Substance classes including bitter-principle herbs, Vata-balancing spices[44], and lipid-regulating botanicals enhance insulin-independent glucose uptake through AMPK activation, improve[45] β-cell insulin secretory capacity through mitochondrial optimization, and reduce hepatic glucose output through gluconeogenic suppression.

Kapha-associated dyslipidemia. Langhana interventions targeting elevated triglycerides[46] and reduced HDL cholesterol employ astringent compounds, hepatic lipid metabolism enhancers, and VLDL-reduction[47] promoters. These substances suppress hepatic triglyceride synthesis through reduced acetyl-CoA carboxylase activity, promote VLDL particle remodeling toward larger, less atherogenic phenotypes, and enhance lipoprotein lipase-mediated triglyceride hydrolysis.[48]

Brimhana Applications

Kshaya (tissue depletion) and cachexia. Disease-associated muscle loss, age-related sarcopenia, and protein-energy malnutrition represent cardinal Brimhana indications.[49] Protocols incorporating muscle-promoting substances, immunonutrient-rich preparations, and myogenic precursor-activating botanicals restore muscle mass, enhance strength capacity[50],

and promote immunological recovery. Ashwagandha, a prototypical Brimhana agent, has been demonstrated in randomized controlled trials to increase muscle mass through myostatin suppression and IGF-1 pathway activation.

Vata dosha disorders and neurodegeneration. Excessive Vata dosha manifesting as neurological degeneration, tremor, cognitive decline[51], and psychiatric instability responds to Brimhana protocols utilizing nervous system-nourishing substances, myelin-supporting lipids[52] and neurotrophic botanicals. These substances enhance neuroplasticity through increased brain-derived neurotrophic factor (BDNF[53]) expression, promote myelin sheath integrity through increased cholesterol and phospholipid bioavailability, and stabilize dopaminergic and GABAergic signaling.

Reproductive-endocrine dysfunction. Hormonal insufficiency and menopause-associated symptoms[54] benefit from Brimhana protocols incorporating estrogen-phytomodulatory substances, progesterone-supporting botanicals, and adaptogenic agents enhancing neuroendocrine stability.[55] These substances enhance luteal phase progesterone bioavailability, reduce ovarian follicular apoptosis, and stabilize hypothalamic-pituitary-ovarian signaling.

DISCUSSION

This review demonstrates that Langhana and Brimhana represent sophisticated, opposing yet complementary therapeutic paradigms addressing the full spectrum of metabolic dysfunction characterizing contemporary disease.[56] Rather than viewing these approaches as contradictory, contemporary clinical practice recognizes them as context-sensitive modalities[57]: Langhana for metabolic excess and tissue accumulation; Brimhana for tissue insufficiency and anabolic restoration.

Assessment and Constitution-Based Selection

Initial clinical assessment requires comprehensive evaluation of constitutional type[58], current imbalance pattern, tissue integrity status, digestive capacity, and elimination function. Individuals demonstrating obesity with preserved[59] or elevated digestion represent optimal Langhana candidates; conversely, those manifesting tissue depletion with compromised metabolic function require Brimhana prioritization.

Sequential Therapeutic Staging

Classical Ayurvedic protocols recommend initial Langhana administration in individuals[60] with significant tissue excess, particularly when metabolic endotoxin (Sama Ama) is evident. This preliminary phase mobilizes sequestered deposits and restores channel patency[61], typically requiring 4–12 weeks. Upon achievement of improved channel function and reduced metabolic endotoxin biomarkers, transition to Brimhana protocols establishes sustainable tissue equilibrium and restores metabolic stability.

Conversely, individuals with clear tissue insufficiency without significant metabolic endotoxin burden proceed directly to Brimhana protocols. Post-illness[62] and post-intensive purification recovery universally employs Brimhana to rebuild tissue reserves and restore systemic capacity.

Monitoring and Protocol Modification

Clinical responsiveness monitoring includes both subjective parameters (energy, satiety, mental clarity, sleep quality) and objective[63] biochemical markers (lipid profile, fasting glucose, inflammatory cytokines). Excessive or protracted Langhana administration[64] beyond therapeutic endpoint precipitates undesired tissue depletion and Vata aggravation.

Clinical indicators warranting protocol transition include satiety-hunger balance restoration, reduction of adiposity-associated inflammation biomarkers, and emergence of indicators[65] of adequate tissue reserve. Modern metabolic science validates multiple mechanisms underlying these opposing therapeutic paradigms.[66]

Langhana-principle interventions consistently enhance sympathetic metabolic activation, promote insulin sensitivity.[67] through GLUT4 translocation, reduce adipose tissue inflammation through suppression of macrophage infiltration and TNF-α production, and enhance mitochondrial biogenesis.[68] Simultaneously, Brimhana-principle nourishment during energy deficit or post-illness activates anabolic mTOR signaling, enhances myogenic and osteogenic differentiation, and restores immunological competence through enhanced regulatory T cell differentiation and reduced pro-inflammatory Th17 polarization.

This complementary relationship reflects evolutionary metabolic adaptation mechanisms.[69] during periods of energy abundance, thermogenic and lipolytic pathways predominate (Langhana-equivalent); during periods of energy insufficiency or post-stress recovery,

anabolic and immune-supporting pathways activate (Brimhana-equivalent).[70] Sequential application—initial Langhana to restore channel function, followed by Brimhana to establish tissue equilibrium—represents an optimal clinical strategy.

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