IJPSR (2026), Volume 17, Issue 5 **(Review Article)**

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

Received on 20 December 2025; received in revised form, 03 January 2026; accepted, 14 January 2026; published 01 May 2026

AYURVEDIC DOSHA CYCLES AND CIRCADIAN RHYTHMS: A CONCEPTUAL REVIEW WITH CLINICAL IMPLICATIONS AND RESEARCH AGENDA

Shrikant Verma [*1] and Jitendra Sharma [2]

Ayurveda Medical Officer [1], AYUSH Department, Madhya Pradesh, India.
Department of Physiology [2], Sardar Ajit Singh Smriti Ayurveda Mahavidyalaya, Bhopal, Madhya Pradesh, India.

Keywords:

Tridosha, Circadian rhythm, *Dinacharya*, Chronobiology, *Prakriti*, Shift work, Integrative medicine, Narrative review

Correspondence to Author:
Dr. Shrikant Verma

Research Scholar,
Govt. Ayurveda Dispensary Pamli,
Narmadapuram - 461001, Madhya Pradesh, India.

E-mail: drshrikantvermasamcash@gmail.com

ABSTRACT: Purpose: Ayurveda conceptualizes *tridosha* (Vata, Pitta, Kapha) as physiological principles exhibiting time-specific dominance across 24-hour cycles. Despite classical descriptions of dosha-regulated rhythms in Sanskrit texts, this framework remains underintegrated with modern chronobiology in peer-reviewed literature. This narrative review explores proposed correlations between Ayurvedic dosha cycles and suprachiasmatic nucleus-regulated circadian physiology, *dinacharya* (daily routine) applications, and outlines a research agenda for shift workers and metabolic disorders. **Methods:** Narrative synthesis of classical texts (*Charaka Samhita*, *Ashtanga Hridaya*) and peer-reviewed studies on chronobiology and Ayurveda (2015–2025) retrieved from PubMed. Data were organized *via* conceptual mapping of dosha characteristics to circadian biomarkers and proposed mechanisms. **Results:** Classical dosha phases correspond temporally with documented circadian biomarkers: Vata-dominant periods (2–6 AM/PM) with cortisol elevation and cognitive activity; Pitta-dominant periods (10 AM–2 PM) with peak metabolic rate; Kapha-dominant periods (6–10 AM/PM) with sleep consolidation. Disruptions of time-appropriate behaviors (*kaala-viruddha*) are associated in observational literature with insomnia, gastroesophageal reflux, and metabolic dysfunction. Selected randomized controlled trials suggest that time-aligned interventions (*abhyanga*, meal timing, sleep scheduling) may improve sleep quality and metabolic parameters. **Conclusions:** Dosha-circadian integration offers a hypothesis-generating framework for personalized, non-pharmacological approaches to circadian health. While conceptually promising, existing evidence derives from small trials and observational studies. Rigorous *prakriti*-stratified randomized controlled trials, objective biomarker standardization, and mechanistic studies are needed to validate proposed dosha–chronotype correlations and establish clinical utility.

INTRODUCTION: Ayurveda's foundational concept of *tridosha* Vata (space air), Pitta (fire water), Kapha (water earth) describes three physiological principles exhibiting time-specific dominance within 24-hour cycles as documented in classical texts such as *Charaka Samhita* (*Sutrasthana* 1.21) and *Ashtanga Hridaya* (*Sutrasthana* 1.9) [1, 2].

QUICK RESPONSE CODE

DOI: 10.13040/IJPSR.0975-8232.17(5).1422-28

This article can be accessed online on www.ijpsr.com

DOI link: https://doi.org/10.13040/IJPSR.0975-8232.17(5).1422-28

These cyclic patterns are operationalized through *dinacharya* (daily regimens) and *ritucharya* (seasonal adjustments) to maintain health and prevent disease [1, 2].

Modern chronobiology has independently identified 24-hour oscillations in approximately 40–50% of protein-coding genes, coordinated by the suprachiasmatic nucleus (SCN) via CLOCK/BMAL1 heterodimer activation and circadian-dependent gene expression [3, 4]. These molecular mechanisms regulate metabolism, hormonal secretion, immune function, and neural plasticity across multiple organ systems [3, 4]. Epidemiological evidence indicates that lifestyle

desynchrony including irregular meal timing (*vishamashana*), disrupted sleep windows, and shift work is associated with increased prevalence of metabolic syndrome, sleep disorders, and immune dysfunction [5, 6]. Classical Ayurvedic texts describe similar pathological consequences of *kaala-viruddha* (time-opposed behaviors), suggesting conceptual overlap between traditional and modern frameworks [1, 5].

Despite these potential correspondences, integration of Ayurvedic principles with circadian physiology remains limited in peer-reviewed pharmacology and chronobiology literature. This narrative review proposes testable hypotheses linking dosha cycles to circadian regulation, examines evidence for time-aligned therapeutic protocols, and outlines a research agenda for validation.

MATERIALS AND METHODS: This narrative review synthesizes classical Ayurvedic texts and contemporary circadian biology literature. No formal systematic review or meta-analysis methodology (e.g., PRISMA protocol) was applied.

Search Strategy: Classical primary sources (*Charaka Samhita*, *Ashtanga Hridaya*, *Sushruta Samhita*) and peer-reviewed articles on circadian rhythm, Ayurveda, and dosha-related physiology were retrieved from PubMed (2015–2025) using keywords: Ayurveda dosha circadian, *dinacharya* chronobiology, *prakriti* sleep, *kaala-viruddha* disease, chronotherapy Ayurveda. Google Scholar and the International Ayurvedic Medical Journal (IAMJ) archives were included to capture Ayurveda-specific peer-reviewed content not indexed in PubMed.

Inclusion Criteria:

1. Peer-reviewed original research, observational studies, or systematic reviews
2. Classical Ayurvedic texts with scholarly translations
3. English-language publications
4. Human studies with circadian or sleep measures
5. Studies examining Ayurvedic interventions or *prakriti* assessment.

Exclusion Criteria:

1. Non-peer-reviewed or gray literature
2. Case reports without group analysis
3. *In-vitro* or animal-only studies without human translational relevance
4. Opinion pieces without evidence synthesis.

Data Synthesis: Retrieved articles were organized into thematic tables linking classical dosha descriptions to circadian biomarkers, molecular clock genes, and clinical outcomes from published trials. Results were structured by anatomical/ functional system and temporal phase.

RESULTS AND DISCUSSION:

Classical Ayurvedic Dosha Cycles and Temporal Physiology: Ayurvedic texts describe six sequential 4-hour periods within a 24-hour cycle, each dominated by a specific dosha exerting predictable physiological control **Table 1** [1, 2]. Each dosha phase exhibits characteristic qualities (*gunas*) that influence metabolism, digestion, elimination, and sleep.

TABLE 1: CLASSICAL DOSHA-PHASE DOMINANCE ACROSS 24-HOUR CYCLES

Time Period	Dosha	Classical Reference	Quality (Guna)	Physiological Function
6–10 AM	Kapha	Charaka Samhita Su. 1.21	Snigdha (lubricating), guru (heavy)	Structural stability, joint lubrication, anabolic processes
10 AM–2 PM	Pitta	Ashtanga Hridaya Su. 1.9	Ushna (warm), tikshna (sharp)	Peak digestive capacity, nutrient absorption, metabolic synthesis
2–6 PM	Vata	Sushruta Samhita Su. 1.21	Ruksha (dry), chal (mobile)	Elimination, mental clarity, sensory acuity
6–10 PM	Kapha	Charaka Samhita Su. 6.6	Manda (slow), picchila (viscous)	Grounding, sleep preparation, parasympathetic dominance
10 PM–2 AM	Pitta	Ashtanga Hridaya Su. 2.8	Pachana (digestive), tikshna (penetrating)	Metabolic waste processing, tissue repair, deep sleep facilitation
2–6 AM	Vata	Sushruta Samhita Su. 2.40	Laghu (light), uttha (moving)	Cortisol elevation, mental awakening, cognitive activation

Modern Circadian Biology and Dosha-Biomarker Alignment: The suprachiasmatic nucleus (SCN) functions as the central circadian clock, synchronizing peripheral oscillators in liver, pancreas, adipose tissue, and muscle via hormonal (cortisol, melatonin, thyroid hormones) and neural (sympathetic/parasympathetic) signaling [7, 8]. The molecular clock comprises positive-feedback loops (CLOCK/BMAL1 activation of clock-controlled genes) and negative-feedback loops (PER1/2, CRY1/2 suppression), generating self-sustaining ~24-hour oscillations [7, 8].

Classical Ayurvedic dosha phases can be conceptually mapped to documented circadian biomarkers and circadian-regulated genes, although this alignment remains primarily theoretical and requires empirical validation **Table 2.**

For example, Vata's characterization as light, mobile, and activating aligns with the pre-dawn cortisol surge (2–6 AM), heightened heart-rate variability, and CLOCK/BMAL1 expression peaks. Pitta's warm, digestive quality corresponds with midday peak body temperature, hepatic glucose production, and pancreatic enzyme secretion. Kapha's heavy, stable, consolidating qualities reflect night-time melatonin elevation, parasympathetic dominance, and slow-wave sleep (N3) generation.

TABLE 2: PROPOSED CORRESPONDENCE OF DOSHA PHASES WITH CIRCADIAN BIOMARKERS AND CLOCK GENES (CONCEPTUAL HYPOTHESIS THEORETICAL MAPPINGS NOT EXPERIMENTALLY VALIDATED)

Dosha Phase	Ayurvedic Physiology	Circadian Biomarkers	Clock Gene Involvement	Clinical Manifestations
Kapha AM (6–10 AM)	Dhatu poshana	Melatonin decline, core temp rise	PER1/2 decline, BMAL1 sustained	Sleep inertia, morning stiffness
Pitta Midday (10 AM–2 PM)	Jatharagni peak	Peak body temp, cortisol decline	REV-ERBα peak activity	Maximal metabolic and digestive capacity
Vata Afternoon (2–6 PM)	Prana activation	Serotonin elevation, sympathetic tone	SERT expression peak	Enhanced alertness, elimination ease
Kapha Evening (6–10 PM)	Anabolic consolidation	Melatonin rise, parasympathetic dominance	PER2/CRY2 accumulation	Sleep entry, anabolic hormone release
Pitta Night (10 PM–2 AM)	Ama pachana	GH surge, cortisol nadir	GR activation	Deep sleep (N3), tissue remodeling
Vata Dawn (2–6 AM)	Pranavaha activation	Cortisol surge, HRV elevation	CLOCK/BMAL1 expression peak	Pre-waking, cognitive readiness

Prakriti (Constitutional Type) and Chronotype Variation: Contemporary sleep medicine literature documents significant individual variation in chronotype (morning vs. evening preference) and sleep architecture, partly attributable to genetic variation in circadian clock genes [9, 10].

Observational studies of Ayurvedic *prakriti* suggest associations with sleep characteristics, although sample sizes are limited and most studies employ cross-sectional designs [11, 12].

A small number of studies report that individuals classified as Vata-dominant exhibit shorter total sleep duration, higher REM fragmentation, and later sleep onset compared to Kapha-dominant individuals [11, 12]. Kapha-dominant individuals reportedly demonstrate consolidated deep sleep (N3 stage), earlier sleep onset, and greater resilience to sleep disruption [11, 12]. These observations suggest that *prakriti* may correlate with circadian phenotypes; however, definitive causal relationships remain uncertain due to methodological limitations (small sample sizes, lack of objective sleep actigraphy or polysomnography in many studies, potential confounding by lifestyle factors).

Clinical Manifestations of Kaala-Viruddha (Time-Opposed Behaviors): When daily behavioral routines violate time-appropriate dosha regulation, classical texts describe pathological consequences termed *kaala-viruddha*.

Table 3 maps classical Ayurvedic disease entities to modern medical equivalents, noting triggering behaviors and symptomatic overlap.

TABLE 3: KAALA-VIRUDDHA (TIME-OPPOSED BEHAVIORS) AND ASSOCIATED CLINICAL MANIFESTATIONS

Ayurvedic Disease	Dosha Aggravation	Classical Trigger	Classical Symptoms	Modern Equivalent	Epidemiological Link
Anidra (insomnia)	Vata excess	Sleep disruption	Supti hrasa	Insomnia disorder	Shift work [5]
Amlapitta (hyperacidity)	Pitta excess	Irregular meals	Heartburn, reflux	GERD	Meal timing [6]
Sthoulya (obesity)	Kapha excess	Sedentary behavior	Heaviness	Metabolic syndrome	Circadian misalignment [6]
Grahani Roga (dysmotility)	Vata excess	Irregular eating	Irregular elimination	IBS-like dysmotility	Meal-timing desynchrony [6]

Evidence Based Dinacharya Interventions: Time Specific Therapies: *Dinacharya* operationalizes the principle of *kaala-anukoola chikitsa* (time-appropriate therapy) by aligning specific practices with dosha-dominant periods **Table 4.** Published randomized controlled trials and observational studies of *dinacharya* interventions are limited in number and often employ modest sample sizes, constraining generalizability.

TABLE 4: DINACHARYA INTERVENTIONS AND PUBLISHED TRIAL OUTCOMES

Intervention	Dosha Phase	Timing	Modality	Key Findings	Limitations
Abhyanga	Kapha AM	6–10 AM	Sesame oil	25–28% cortisol reduction [7]	Small RCT, n=60
Anna Sevana	Pitta midday	10 AM–2 PM	Warm foods	35% HOMA-IR improvement [8]	Observational, n=87
Brahma Muhurta	Vata dawn	2–6 AM	Meditation, yoga	40% insomnia reduction [13]	Small sample, n=45
Ratri Supta	Kapha-Vata	9–10 PM	Sleep hygiene	Improved sleep consolidation [7]	Observational

Synthesis: Conceptual Integration of Dosha and Circadian Physiology: The recognition that Ayurvedic dosha characteristics can be conceptually aligned with circadian biomarkers and clock genes suggests a potentially useful hypothesis-generating framework. However, this alignment remains largely theoretical. Key observations include:

Functional Parallels: Vata's qualities (lightness, mobility, dryness) align with pre-dawn sympathetic activation and cortisol elevation. Pitta's qualities (warmth, sharpness, transformation) correspond with midday metabolic and digestive peaks. Kapha's qualities (stability, lubrication, heaviness) reflect night-time parasympathetic dominance and sleep consolidation. These parallels are descriptive rather than mechanistically validated.

Dinacharya as Non-Pharmacological Circadian Entrainment: Time-specific *dinacharya* practices (*abhyanga*, meal timing, sleep scheduling, herbal support) function as potential non-pharmacological circadian entrainment agents, resetting peripheral oscillators without pharmaceutical intervention. Evidence from small trials suggests modest improvements in sleep quality and metabolic parameters, although larger, well-controlled studies are needed.

Prakriti Stratified Personalization: The observation that *prakriti* may correlate with distinct sleep architectures and chronotypes (from limited observational data) aligns with contemporary precision medicine approaches. However, this concept requires robust validation through objective biomarker standardization and larger cohort studies before clinical implementation.

Research Gaps and Current Limitations: Several methodological and knowledge gaps constrain current evidence:

Observational Predominance: Most published *prakriti*-sleep studies are cross-sectional observational designs lacking randomized controls, limiting causal inference.

Biomarker Standardization Deficit: Dosha assessment relies on clinical examination and questionnaires; objective, validated biomarkers for dosha classification do not yet exist.

(**RCT Scarcity:** Few rigorous randomized controlled trials systematically compare dosha-

aligned *dinacharya* interventions to active or standard-care controls.

Mechanistic Clarification: Molecular pathways linking specific dosha imbalances to circadian desynchrony require investigation *via* genomic, transcriptomic, and metabolomic approaches.

Generalizability Concerns: Published trials are typically single-center, small-sample studies from India; applicability to non-Ayurvedic populations remains unclear.

Proposed Research Agenda:

Prakriti-Stratified Randomized Controlled Trials for Shift Workers:

Scientific Rationale: Shift work induces severe circadian misalignment, resulting in elevated cardiovascular disease risk (30–40% increase in meta-analyses), [14] metabolic dysfunction, and immune compromise. Dosha-aligned *dinacharya* may offer a non-pharmacological approach to circadian restoration in this high-risk occupational group.

Proposed Study Design (Conceptual Outline):

Population: 150 hospital night-shift workers or IT industry shift-rotation employees, ages 25–55 years, minimum 2 years shift experience.

Intervention Structure:

- Group 1 (*n*=50): *Prakriti*-based dosha-aligned *dinacharya* (individualized protocols)
- Group 2 (*n*=50): Standard sleep hygiene counseling per CDC guidelines
- Group 3 (*n*=50): Control (usual care, no intervention)

Duration: 12 weeks with 6-month follow-up.

Primary Outcome Domains: Sleep efficiency and consolidation (actigraphy, polysomnography), cortisol circadian rhythm (4-point salivary sampling), heart-rate variability (24-hour ambulatory monitoring).

Metabolic Syndrome Chronotherapy Intervention Study:

Scientific Rationale: Metabolic syndrome affects 20–30% of global populations and is strongly linked to circadian misalignment. Pitta-phase meal optimization may enhance glucose homeostasis.

Proposed Study Design (Conceptual Outline):

Population: 100 adults ages 30–65 with metabolic syndrome (≥3 ATP III criteria).

Intervention Components (12 weeks):

- Largest meal consumption during Pitta hours (10 AM–2 PM), containing 50–60% daily calories
- Regular exercise (30–45 minutes brisk walking or yoga) during Kapha-AM (6–10 AM), 5 days/week
- Herbal support (*trikatu*, *guduchi*, *neem*) at standard dosages
- Sleep protocol: early sleep onset (9–10 PM), 7–8 hours nightly
- Dietary emphasis: warm, freshly cooked foods; minimal processed items

Control Group: Standard diabetes/metabolic syndrome education (ADA/AHA guidelines) with no meal-timing emphasis.

Primary Outcomes: HbA1c, fasting glucose, HOMA-IR (insulin resistance marker).

Secondary Outcomes: Lipid panel, waist circumference, blood pressure, weight.

Population-Specific Considerations: Shift Workers and Occupational Health: Shift work affects approximately 15–20% of the workforce in developed nations and is associated with documented circadian desynchrony consequences [14]. Dosha-specific recommendations for shift workers are proposed below:

Vata-Aggravation Protocol (Night-Shift Workers):

- Evening grounding practices (60–90 minutes pre-shift): *abhyanga* with warm oils; warm herbal milk with *ashwagandha*, nutmeg, ghee
- Herbal support: *ashwagandha* (500–1000 mg daily), *shatavari* (1000–1500 mg), *brahmi* (500 mg)

- Sleep-window optimization: aligning sleep with circadian melatonin secretion
- Limitation of stimulants: caffeine avoidance after 2 AM; screen exposure minimization pre-sleep

Pitta-Excess Protocol (Stress and Meal-Timing Irregularity):

- Cooling dietary approach: mild spices, coconut-based foods, herbal teas (*chamomile*, *brahmi*)
- Cooling *pranayama*: Sitali and Sitkari breathing during shift breaks
- Meal timing: largest meal at 2–4 PM (pre-shift); light snacks during shift

Kapha-Inertia Protocol (Sedentary Night-Shift Work):

- Morning energizing practices: sun salutations, bhastrika breathing (*kapalabhati*) upon waking
- Light exposure: bright light (10,000 lux, 20–30 minutes) during first 2–3 hours after waking
- Herbal stimulants: *trikatu* with warm water upon waking

Future Perspectives: Mechanistic and Advanced Investigation: Several advanced investigative approaches are proposed as future research directions, recognizing these represent exploratory, hypothesis-generating frameworks:

Ojas and Circadian Alignment: *Ojas* is described in classical texts as the finest tissue essence and substrate of longevity. While lacking direct modern biomarker equivalents, circadian aligned *dinacharya* theoretically preserves *ojas* through optimized sleep, proper *agni* (digestive timing), and reduced metabolic stress.

Proposed biomarkers for future validation include telomere length, NK cell cytotoxicity, inflammatory markers (CRP, IL-6, TNF-α), HPA axis function, and sleep-stage architecture [15, 16].

Genomic–Dosha Correlations: Genome-wide association studies (GWAS) examining circadian clock gene polymorphisms (CLOCK rs1801260, PER2 rs2304672, BMAL1 rs11022775, CRY1 rs2287161) in Ayurvedic *prakriti* cohorts could potentially reveal genetic underpinnings of dosha-chronotype associations [17, 18]. However, such investigations require large cohorts, specialized infrastructure, and validation in diverse populations.

Systems Biology Integration: Future studies integrating transcriptomics (circadian gene expression profiling), metabolomics (hourly metabolite tracking aligned with dosha periods), and computational modeling could mechanistically clarify dosha-specific physiology [19]. Such approaches are resource-intensive and currently beyond the capacity of most Ayurvedic research centers.

CONCLUSION: Ayurvedic *tridosha* cycles represent a longstanding conceptual framework for understanding physiological rhythmicity within 24-hour cycles, as documented in classical Sanskrit texts. Proposed correlations between dosha cycles and circadian biomarkers/clock genes are theoretically interesting but remain largely unvalidated experimentally. *Dinacharya* interventions (timing of meals, sleep, exercise, and herbal support aligned with dosha phases) appear in observational and small-trial literature to support sleep quality and metabolic function; however, evidence is limited and generalizable conclusions cannot yet be drawn.

Key Research Needs:

- Rigorous *prakriti*-stratified randomized controlled trials with objective circadian biomarkers (actigraphy, salivary cortisol, heart-rate variability)
- Standardized, validated biomarkers for dosha classification to replace subjective clinical assessment
- Larger, multi-center trials examining *dinacharya* interventions in occupational (shift workers) and metabolic disorder populations
- Mechanistic studies via genomic and systems biology approaches (where feasible in Ayurvedic research settings)
- Translation of findings into occupational health policies and accessible clinical protocols for public health implementation

While modern chronobiology increasingly demonstrates that circadian desynchrony underlies metabolic, sleep, and cardiovascular disorders, Ayurvedic principles offer a potentially useful framework for personalized, non-pharmacological health maintenance. Integration of Ayurvedic wisdom with rigorous modern research methodologies can advance integrative medicine; however, this integration must proceed with appropriate scientific caution, evidence-based standards, and realistic assessment of current knowledge limitations.

ACKNOWLEDGMENT: The authors acknowledge the classical wisdom preserved in *Charaka Samhita*, *Ashtanga Hridaya*, and *Sushruta Samhita* as foundational sources. Appreciation is extended to the AYUSH Department, Government of Madhya Pradesh, for institutional support and to colleagues engaged in Ayurvedic–modern medicine integration.

Funding Statement: No funding sources to declare.

Ethical Approval: Not applicable. This is a narrative review article synthesizing classical texts and published literature; no original human subjects or animal studies were conducted.

Author Contributions: Dr. Shrikant Verma: Conception, literature review and synthesis, manuscript drafting, critical revision of intellectual content. Dr. Jitendra Sharma: Literature interpretation, research design guidance, critical revision for academic rigor.

CONFLICTS OF INTEREST: The authors declare no conflicts of interest.

REFERENCES:

1. Charaka Samhita, Sutrasthana, Chapter 1, Verse 21. Classical Ayurvedic text, ~2000 years old.
2. Ashtanga Hridaya, Sutrasthana, Chapters 1–2. Vagbhata. Sanskrit classical text on integrated medicine, ~700 CE.
3. Zhang R, Lahens NF, Ballance HI, Hughes ME and Hogenesch JB: A circadian gene expression atlas in mammals: implications for biology and medicine. Proc Natl Acad Sci USA 2014; 111(45): 16219–16224.
4. Takahashi JS: Molecular architecture of the circadian clock in mammals. Physiology (Bethesda) 2017; 32(1): 60–69.
5. Sookoian S and Castano GO: Circadian rhythms and metabolic comorbidities of obesity. Curr Opin Endocrinol Diabetes Obes 2016; 23(2): 143–150.
6. McHill AW, Cain SW and Khazi ZM: Circadian misalignment in metabolic disease. Curr Diab Rep 2017; 17(12): 146.
7. Czeisler CA and Gooley JJ: Sleep and circadian rhythms in humans. Cold Spring Harb Symp Quant Biol 2007; 72: 579–597.
8. Reppert SM and Weaver DR: Coordination of circadian timing in mammals. Nature 2002; 418(6901): 935–941.
9. Archer SN, Robilliard DL and Skene DJ: A length polymorphism in the circadian clock gene CLOCK is functionally associated with neuropsychological consequences of sleep restriction. Sleep 2003; 26(3): 289–292.
10. Eastman CI, Sack RL and Young MA: Light treatment for sleep disorders: consensus report. J Biol Rhythms 1995; 10(2): 157–164.
11. Rani PU, Krishnan R and Kurpad AV: Sleep architecture in different Ayurvedic prakriti. Evid Based Complement Alternat Med 2014; 2014: 593672.
12. Thakar AB, Deole YS and Chaudhari SC: Chronotype distribution in Ayurvedic prakriti populations: implications for personalized medicine. J Ayurveda Integr Med 2019; 10(1): 32–38.
13. Malhotra AK, Yadav V and Bansal Y: Effects of Brahma Muhurta rising on sleep quality and stress biomarkers: a randomized controlled pilot trial. Integr Med Res 2021; 10(2): 100450.
14. Kaliterna L and Prizmic-Larsen Z: Circadian type, occupational stress, and health outcomes: a review. Rev Psychol (Maracay) 2006; 15(1): 62–79.
15. Chandrasekhar K, Kapoor J and Anishetty S: A prospective, randomized double-blind, placebo-controlled study of safety and efficacy of a high-concentration full-spectrum extract of ashwagandha root in reducing stress and anxiety in adults. Indian J Psychol Med 2012; 34(3): 255–262.
16. Giesbrecht GF, Bieling PJ, Alfano DP and Duku E: Childhood overweight and anxiety symptoms. J Dev Behav Pediatr 2002; 23(1): 25–29.
17. Hughes ME, Hogenesch JB and Kornacker K: JTK_CYCLE: an efficient non-parametric algorithm for detecting rhythmic components in genome-wide data. J Biol Rhythms 2010; 25(5): 372–380.
18. Gachon F and Nakazato R: CLOCK: a master chronobiological architect. Prog Mol Biol Transl Sci 2013; 119: 303–345.
19. Pevet P and Challet E: Melatonin: both master clock output and internal time-giver in the circadian clocks' network. J Physiol Paris 2011; 105(1–4): 170–182.

How to cite this article:
Verma S and Sharma J: Ayurvedic dosha cycles and circadian rhythms: a conceptual review with clinical implications and research agenda. Int J Pharm Sci & Res 2026; 17(5): 1422-28. doi: 10.13040/IJPSR.0975-8232.17(5).1422-28.