

# Chronobiology of Dinacharya: A Conceptual Review

## Integrating Ayurveda with Circadian Science

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**Abstract-** Ayurveda prescribes Dinacharya (daily regimen) as a cornerstone of Swasthavritta for maintaining health and preventing disease. Rooted in dosha kala, it emphasizes rising in Brahma Muhurta, morning purification practices, timed meals, appropriate exercise, and early sleep. Modern chronobiology describes circadian rhythms controlled by the suprachiasmatic nucleus, melatonin, cortisol, and peripheral clocks, disruption of which leads to metabolic, psychological, and sleep disorders.

This review integrates classical Ayurvedic prescriptions of Dinacharya with evidence from chronobiology. Comparative analysis suggests striking parallels: Brahma Muhurta rising coincides with cortisol awakening response; madhyanna bhojana (midday meal) aligns with peak digestive efficiency; ratri nidra (night sleep) correlates with melatonin secretion and immune restoration.

The synthesis highlights Ayurveda as an ancient chronomedicine. Misalignment from Dinacharya mirrors circadian disruption, leading to non-communicable diseases, whereas adherence supports optimal physiological functioning. This conceptual model provides a preventive framework for modern lifestyle-related disorders.

**Index Terms—** Ayurveda, Dinacharya, Circadian Rhythm, Chronobiology, Preventive Health, Swasthavritta

### I. INTRODUCTION

“स्वस्थस्य स्वास्थ्यम् रक्षणम् आतुरस्य विकार प्रशमनं च” (च.सू.30/26) — The foremost aim of Ayurveda is to preserve the health of the healthy and treat the diseased.

Ayurveda prescribes Dinacharya, a structured daily regimen based on the dominance of doshas (Kapha in morning, Pitta at midday, Vata in evening). It

emphasizes Brahma Muhurta utthana (waking before sunrise), Mala visarjana and danta dhavana (cleansing), Abhyanga and Vyayama (oil massage and exercise), Madhyanna bhojana (heaviest meal at noon), and Ratri nidra (night sleep before midnight).

Modern science identifies circadian rhythms—24-hour biological cycles regulating metabolism, hormone secretion, immune function, and sleep—controlled by the suprachiasmatic nucleus (SCN). Disruption of circadian alignment, as seen in shift work, jet lag, and late-night digital exposure, is linked to obesity, diabetes, cardiovascular disease, depression, and cancers.

This paper explores how Dinacharya aligns with circadian biology, suggesting Ayurveda as an early form of chronomedicine.

### II. METHODS / APPROACH

This is a conceptual review.

- Ayurvedic data sources: Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya.
- Modern references: PubMed, Google Scholar, and WHO reports on circadian rhythm, melatonin, cortisol, and chronomedicine.
- Approach: Comparative analysis of Dinacharya timings with known circadian markers.

### III. DISCUSSION

#### A. Dinacharya and Biological Clocks

Dinacharya practices show parallels with circadian physiology:

- Brahma Muhurta utthana (before sunrise waking): Enhances medha, longevity → Cortisol Awakening Response (CAR).
- Morning Vyayama (exercise): Balances Kapha, stimulates Agni → Morning exercise improves insulin sensitivity.
- Madhyanna bhojana (midday meal): Pitta kala, strongest Agni → Peak digestive enzyme secretion at noon.
- Evening winding down: Avoid heavy meals and exertion → Fall in core body temperature, circadian preparation for rest.
- Ratri nidra (night sleep): Restores doshas → Melatonin rise, immune repair, growth hormone release.

#### B. Consequences of Misalignment

Ayurveda warns that ratri jagarana (night vigil) vitiates Vata and Pitta. Modern evidence links shift work with metabolic syndrome, depression, and cardiovascular disease. Late-night meals disturb Agni, paralleling findings of impaired glucose tolerance with late eating.

#### C. Preventive Implications

Aligning with Dinacharya provides a natural, culturally rooted preventive model. It is useful in urban lifestyle disorders: obesity, diabetes, hypertension, insomnia, and anxiety. It also offers opportunities for integrative programs combining Dinacharya with modern sleep hygiene and chronotherapy.

### IV. CONCLUSION

Dinacharya and chronobiology share remarkable conceptual and practical parallels. Ayurveda anticipated the science of biological rhythms, prescribing daily regimens aligned with dosha kala that correspond with circadian markers such as cortisol, melatonin, and digestive cycles.

Non-adherence leads to circadian misalignment and disease, while adherence fosters preventive health. Integrating Dinacharya with modern chronomedicine provides a robust strategy for addressing non-communicable lifestyle disorders.

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