

“The Role of Kāla (Time) in Ayurvedic Health, Disease, and Treatment: A Conceptual Review”

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Abstract

In Ayurveda, *Kāla* or time is recognised as one of the fundamental *Karana Dravyas*—the essential causes that sustain existence and transformation in the universe. This review focuses on the applied understanding of *Kāla* and its influence on health, disease development, and treatment. Classical Ayurvedic works such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* describe *Kāla* as an eternal, continuous force that governs creation and decay while maintaining the balance of *Tridosha*—*Vata*, *Pitta*, and *Kapha*. Physiological functions like digestion (*Avasthapaka*), post-digestive transformation (*Vipaka*), and tissue metabolism (*Dhatupaka*) are regulated through temporal cycles. In medical practice, the timing of drug administration (*Aushadha Sevana Kāla*) and therapeutic procedures directly impacts treatment outcomes, a concept parallel to modern chronopharmacology. Preventive aspects such as *Dinacharya* (daily regimen) and *Ritucharya* (seasonal regimen) highlight the importance of living in harmony with natural rhythms. Furthermore, the six stages of disease evolution (*Shatkriyakāla*) emphasise timely intervention for effective management. The integration of temporal principles within Ayurveda offers valuable insight into personalised medicine and biological timing. Aligning lifestyle and therapies with *Kāla* enhances health, ensures preventive care, and demonstrates Ayurveda’s scientific understanding of natural rhythm.

Keywords: *Kāla*, Ayurvedic Siddhanta, biological rhythm, *Tridosha*, chronotherapy

INTRODUCTION

Time is a universal dimension that governs every process in nature, from the rotation of planets to the rhythms of living organisms. In biological sciences, time determines growth, decay, and cyclical patterns of physiological activity.^[1] Modern disciplines such as chronobiology and chronopharmacology explore how temporal rhythms influence metabolism, hormone secretion, and drug efficacy.^[2] These studies emphasise that biological systems function according to internal clocks synchronised with external environmental cycles. Thus, understanding time as a regulatory factor has become central to maintaining health and improving therapeutic outcomes.

Ayurveda, the ancient Indian system of life science, recognised this principle thousands of years ago through the concept of *Kala*. Derived from Sanskrit, *Kala* means “time” and is regarded as one of the nine fundamental elements (*Karana Dravya*) in *Charaka Samhita* (Sutra Sthana 1/48) and Vaisheshika philosophy.^[3] Ayurveda does not treat time as a passive measure but as an active determinant in creation, preservation, and transformation. *Kala* possesses specific qualities (*Gunas*) and actions (*Karmas*), influencing every dynamic change within the human body and the universe.^[4] It governs the processes of production and destruction of beings and defines the past, present, and future as continuous expressions of temporal rhythm.

In clinical practice, *Kala* is considered one of the ten vital parameters of examination (*Dashavidha Parikshya Bhava*).^[5] Its understanding allows physicians to assess disease progression, prognosis, and timing of therapeutic interventions. The classical texts describe that all physiological activities, including the balance of *Tridosha Vata*, *Pitta*, and *Kapha*, are influenced by temporal variations in day, night, seasons, and age.^[6] A person who follows appropriate dietary and lifestyle practices according to these time cycles attains better strength, lustre, and immunity (*Cha. Sa. Sutra Sthana 6/3*). Therefore, *Kala* serves as a vital foundation for preventive medicine and individualised health management.

Ayurveda further integrates the concept of *Kala* into disease classification and treatment planning. Disorders are categorised as *Kalaja* (natural, occurring in due course) or *Akalaja* (premature or untimely).^[7] The timing of medicine administration, known as *Aushadha Sevana Kala*, is another crucial aspect where *Kala* influences therapeutic success.^[8] The time of drug intake can modify its pharmacological response, absorption, and metabolism. This aligns with modern principles of chronopharmacology, which investigate how biological rhythms affect drug efficacy and safety.^[9] Ayurvedic physicians have long emphasised that the same medicine may act differently depending on the time of administration, the patient’s doshic state, and the body’s biological clock.

Physiologically, *Kala* regulates digestion (*Avasthapaka*), metabolism (*Vipaka*), and tissue transformation (*Dhatupaka*). These processes, governed by various forms of *Agni*, occur in a sequential manner reflecting the body's internal timing system.^[10] For instance, *Kapha* predominates during the early phase of digestion, *Pitta* during active digestion, and *Vata* towards the end. Similarly, each *Dhatu* (tissue) receives nourishment in a specific sequence mediated by *Dhatvagni*, illustrating the cyclical and rhythmic nature of metabolism.^[11] Thus, Ayurveda interprets biological processes as time-dependent transformations that maintain internal balance and health.

The temporal dimension is also central to understanding disease evolution and prognosis. The concept of *Shatkriyakala*, described by Sushruta, explains six stages of disease formation and identifies the appropriate time for intervention.^[12] Early recognition and treatment during the initial phases can prevent chronicity and complications. This time-based model of pathology highlights Ayurveda's preventive focus, contrasting with modern medicine's reactive approach, which often identifies disease only after significant physiological damage has occurred.

Although modern medicine acknowledges circadian influences on body functions, the Ayurvedic understanding of *Kala* is more holistic. It integrates cosmic, environmental, and biological rhythms, emphasising harmony between the human organism and its surroundings.^[13] This concept offers a deeper framework for developing personalised and time-based therapeutics. Reintroducing *Kala* in contemporary medical thought could bridge ancient wisdom with current scientific findings, enhancing preventive care and optimising therapeutic timing.

The present review aims to explore the applied aspects of *Kala* in Ayurveda by analysing its influence on diagnosis, disease progression, pharmacology, and therapy. It also seeks to correlate traditional Ayurvedic principles with modern scientific concepts such as biological rhythms and chronopharmacology. Through this synthesis, the study emphasises that *Kala* is not merely a philosophical idea but a practical and measurable factor in health, disease, and healing.

MATERIAL AND METHODS

This review was conducted through a comprehensive analysis of classical Ayurvedic texts including *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya*, along with relevant contemporary research publications. Authentic commentaries and peer-reviewed sources were examined to interpret the applied aspects of *Kāla* in relation to health, disease, and therapeutics.

RESULTS AND DISCUSSION

A comprehensive analysis of Ayurvedic literature shows that *Kāla*, translated as “time,” is not just a chronological measure but a universal, dynamic principle that influences all aspects of life and health. Classical texts such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* describe *Kāla* as an eternal and independent entity that governs creation, maintenance, and dissolution in the universe. It is listed among the nine *Karana Dravyas* (fundamental causes) and considered a critical factor for every transformation, natural or biological. Time is seen as a driving force behind the rhythm of the cosmos and the cyclic changes within the human body.

Conceptual and Philosophical Understanding

Etymologically, *Kāla* originates from the root “*Kalate*,” meaning “to count” or “to measure,” indicating its role as both a quantifier and regulator of change. The texts portray *Kāla* as continuous and indivisible. It is described as incorporeal and limitless, pervading all forms of matter while remaining beyond them. Ancient seers equated *Kāla* with divinity, referring to it as *Bhagavān* (the Almighty) and *Swayambhu* (self-existent), signifying that time itself is the source of all creation.^[14] Its uninterrupted flow ensures the transition from birth to death, making it a determinant of evolution and decay. In this sense, *Kāla* represents both an eternal constant and a changing continuum.

Attributes and Classifications

The classical texts describe *Kāla* as one in number (*Eka*), immeasurable in dimension (*Mahat*), and perpetually active through the processes of combination and separation.^[15] Based on its functions, *Kāla* is categorised into two major forms: *Nityaga Kāla* (eternal or cosmic time) and *Avasthika Kāla* (temporary or situational time).^[16] The first refers to fixed cycles such as days, nights, seasons, and years, while the latter relates to disease progression, ageing, and bodily changes. This classification shows how Ayurveda connects universal time with biological and pathological cycles. Ancient Indian scholars even devised precise temporal units from *Akshinimeśa* (the blink of

an eye) to *Varṣa* (a year), demonstrating their refined understanding of temporal measurement and its biological relevance.

Kāla in Health and Physiology^{[6][10]}

The study of classical texts indicates that *Kāla* influences every physiological process, from digestion and metabolism to tissue regeneration and ageing. Each *Dosha*, *Vata*, *Pitta*, and *Kapha* fluctuates in a cyclical pattern that aligns with daily, seasonal, and age-related changes. For instance, *Kapha* is dominant in the morning, *Pitta* during midday, and *Vata* in the evening. Similarly, in seasonal variation, *Kapha* accumulates in winter, *Pitta* in monsoon, and *Vata* in summer, each being pacified in the following season. These temporal patterns underline the importance of *Dinacharya* (daily routine) and *Ritucharya* (seasonal regimen) as preventive measures for maintaining *Dosha* equilibrium.

Age also follows a rhythmic order, where *Kapha* predominates in childhood, *Pitta* in adulthood, and *Vata* in old age. This explains why disorders such as respiratory diseases are more common in children, metabolic disorders in adults, and degenerative conditions in the elderly. Thus, Ayurveda views ageing and disease as time-governed biological events rather than random occurrences.

Physiological processes like digestion (*Avasthapāka*), post-digestive transformation (*Vipāka*), and tissue metabolism (*Dhatupāka*) are sequential and time-dependent. The stages of *Avasthapāka Madhura*, *Amla*, and *Katu* correspond to the progressive breakdown of food, resembling the modern understanding of enzymatic digestion. The concept of *Vipāka* relates to the long-term effect of food and drugs after digestion, regulated by *Agni* (metabolic energy). These observations demonstrate Ayurveda's early recognition of metabolic timing and its correlation with health maintenance.

Role of Kāla in Disease, Diagnosis, and Treatment

In the clinical context, *Kāla* serves as a critical factor for diagnosis, prognosis, and treatment. Diseases are classified as *Kalaja* (natural and time-bound) or *Akalaja* (premature or untimely), reflecting time's influence on pathology. Similarly, death is categorised as *Kalaja Mrityu* (natural death) or *Akalaja Mrityu* (premature death).^[7] Chronic diseases are viewed as outcomes of prolonged imbalance and delayed management, emphasising the importance of timely intervention.

The therapeutic use of *Kāla* is seen most clearly in the timing of medicine administration (*Aushadha Sevana Kāla*).^[8] The effectiveness and safety of a medicine vary according to when it is taken, which parallels the modern concept of chronopharmacology. Ayurveda prescribes specific times for taking medications depending on the dominance of *Dosha* and the physiological state. This ensures maximum absorption and potency with minimal side effects. For instance, *Vamana* (emesis) is advised during spring for *Kapha* disorders, *Virechana* (purgation) in autumn for *Pitta*, and *Basti* (enema) at the end of summer for *Vata*. Each therapy aligns with the natural cycle of *Dosha* provocation and pacification, reinforcing the concept of biological timing.

Even within procedures like *Snehana* (oleation), *Nasya* (nasal therapy), and *Raktamokshana* (bloodletting), the appropriate time of administration is essential for efficacy. The same applies to *Panchakarma*, where therapies performed in specific seasons show superior results. This time-based approach highlights Ayurveda's systematic understanding of physiology, disease rhythm, and therapeutic synchronisation.

Kāla in Etiopathology and Prevention

Ayurveda identifies *Kāla Parinama* (seasonal variation or temporal change) as one of the major causes of disease, alongside *Prajnaparadha* (mental errors) and *Asatmyaindriyārtha Samyoga* (improper sensory contact).^[17] When natural rhythms are disrupted such as excessive rainfall or unseasonal heat it leads to *Dosha* vitiation and epidemics (*Janapadodhwansa*).^[18] Thus, environmental imbalance is viewed as an extension of temporal disharmony. Maintaining alignment with time through proper diet, sleep, and routine is considered essential for health preservation.

The preventive value of *Kāla* is further emphasised through the concept of *Shatkriyakāla*, which describes six progressive stages of disease. Early detection and management in the initial stages, such as *Sanchaya* (accumulation) and *Prakopa* (provocation), prevent disease progression and complications.^[12] This time-based diagnostic approach provides a unique model for preventive medicine, aligning closely with modern early intervention strategies.

Correlation with Modern Chronobiology

Modern research on biological rhythms and chronopharmacology validates many Ayurvedic insights about the role of time in health and treatment. Circadian and seasonal variations are now recognised to affect metabolism, hormone secretion, and drug response. The Ayurvedic emphasis on timely intervention and cyclical adaptation thus aligns with contemporary understanding of time-dependent physiology. The principle that health depends on harmony with natural cycles remains a cornerstone of both traditional and modern systems.

The collective interpretation of classical and modern findings shows that *Kāla* functions as the governing framework of Ayurveda. It connects cosmic motion with biological rhythm, physiological function, and therapeutic timing. By aligning lifestyle and medical practice with the flow of time, Ayurveda achieves both preventive and curative goals. The ancient concept of *Kāla* therefore remains scientifically relevant today, providing valuable insights for developing time-based and personalised approaches in healthcare.

CONCLUSION

The concept of *Kāla* in Ayurveda extends beyond mere measurement of time; it embodies a universal principle governing health, disease, and treatment. Aligning human activities and therapeutic practices with natural time cycles ensures harmony, enhances efficacy, and promotes longevity. Thus, *Kāla* remains a timeless foundation for preventive and holistic healthcare.

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