

CIRCADIAN RHYTHMS AND KALA: BRIDGING AYURVEDIC WISDOM WITH  
MODERN CHRONOBIOLOGYVd. Gaurang C. Jivrajani<sup>\*1</sup>, Dr. Ranjita Naharia<sup>2</sup>, Dr. Anand Prakash Verma<sup>3</sup><sup>1</sup>Associate Professor, P.P. Savani Ayurvedic College and Hospital, P.P. Savani Knowledge City, Dhamdod, Kosamba, Surat, Gujarat, India.<sup>2</sup>Associate Professor, Samhita Department, Govt Ashtang Ayurved College, Indore (MP) India.<sup>3</sup>Assistant Professor, Samhita Department, Govt. Ashtang Ayurved College, Indore (MP) India.

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**ABSTRACT**

In Ayurveda, *Kala* is an essential principle that governs all physiological, pathological, and therapeutic processes. While both the philosophical and seasonal aspects of *Kala* are well documented, very little research has been conducted on the systematic application of *Kala* in clinical practices. This review assessed the role of *Kala* in Ayurvedic practice by critically evaluating classical text and matrix studies to show the association between Ayurveda's historical principles and modern chronobiology. Ayurveda recognizes that biological rhythms related to *Tridosha*, *Agni*, *Bala* and *Vega* in patients; temporal imbalance (*Hina*, *Mithya* and *Ariyoga* of *Kala*) are considered contributing factors to disease. The clinical use of *Kala* includes *Ritucharya*, *Dinacharya* and the optimal timing procedures for *Panchakarma*. Integrating time-based approaches into therapeutic planning improves treatment effectiveness and reduces adverse outcomes. These principles are consistent with the principles of modern chronobiology and chronotherapy and suggest that time patterns are crucial to both sustaining health and treating disease.

**KEYWORDS:** *Kala*, *Chronotherapy*, *Rhythms*, *Ritucharya*.**INTRODUCTION**

Chronobiology is the scientific study of the variation in biological rhythms over time in relation to the periodic influences of the external environment, especially solar and lunar cycles. Biological rhythms affect physiology, behaviour, and health and disease prevalence in human body. The existence of biological rhythms has been documented in Ayurveda for thousands of years through the Ayurvedic concept of "*Kala*" which refers to time. Ayurvedic literature indicates that *Kala* is one of the primary influencing factors in physiological function, disease presentation and treatment outcomes.<sup>[1-3]</sup> The Ayurvedic concept of *Kala* goes beyond the normal definition of time and includes the season of the year, the daily cycles of *Doshas*, different stages of life, and the progression of disease. *Kala* play important role in clinical practices as follows.

- ✓ Most of the classical texts state that being mindful of time is essential for proper preventive measures such as *Dinacharya* or *Ritucharya*.
- ✓ *Kala* dictates how the therapy is to be applied.
- ✓ Administering the medication at the proper time allows the medicine to work at its fullest potential.
- ✓ Existence of disrupted or abnormal *Kalas* is instrumental in *Janapadodhwansa* because disturbed seasonal cycles produce a multiplicity of disturbances in the balance of the *Doshas* and harmony of the environment.
- ✓ The principles of modern chronobiology and chronotherapy correlate with the Ayurvedic principles of *Kalas*.

Ayurveda uses the concept of *Kala* as a comprehensive model for philosophical reasoning and clinical application. In Ayurveda, the concept of time is not

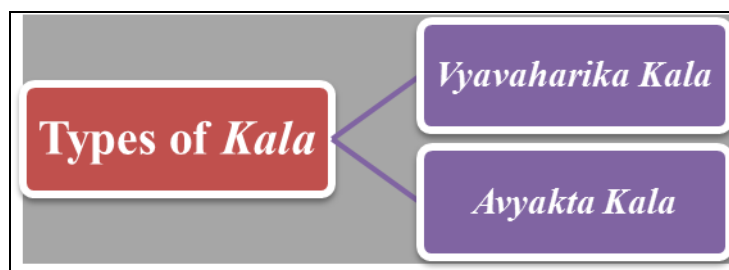
defined simply by the number of minutes or hours in the day, but by its dynamic properties that fundamentally shape the functioning of the body and the development of disease, the success of treatments, and the overall health and wellness of an individual.<sup>[3-5]</sup> Ayurvedic classifications describe both quantifiable aspects of time and non-quantifiable aspects of time. Physicians can utilize this multidimensional concept of time to develop preventive and therapeutic interventions that are appropriate to the body's natural rhythms.

The use of seasonal cycle in the predominance of *Doshas* is foundational to the design of many preventive practices (i.e., *Dinacharya* and *Ritucharya*), while treatment protocols based on the disease stage will align therapeutic interventions with the natural progression of

pathology. In addition, many of these Ayurvedic principles find parallels within the modern science of chronobiology the study of the effects of biological rhythm on physiological and pathological processes.<sup>[4-7]</sup>

### Types

*Kala* or time can be roughly divided into two groups as depicted in **Figure 1**; *Avyakta Kala* and *Vyavaharika Kala*. The quantitative measurement of time, known as *Vyavaharika Kala*, encompasses units like seconds, minutes, hours, days, months, years, and seasons. The stages of life *Balya*, *Tarunya* and *Vriddhavastha* as well as the stages of disease progression, active stage with manifest symptoms and resolved stage are represented by *Avyakta Kala*.



**Figure 1: Types of Kala.**

In Ayurveda, these temporal frameworks of *Kala* serves as the foundation for comprehending physiological rhythms, disease progression, prognosis, and the proper timing of therapeutic actions.<sup>[5-7]</sup>

### Kala and Janapadodhwansa

*Kala* is seen as being responsible for governing all life-related events and how long an individual will live. When we consider *Janapadodhwansa*, the term *Vikrita Kala* is used to refer to the different ways in which the natural qualities of a particular season become disturbed. These types of disturbances have an impact on environmental stability, and as a result, the balance of *Doshas*, contributing to the widespread occurrence of diseases and the eradication of entire populations may occur. Because *Kala* operates according to the immutable, and/or universal laws of nature, the disturbance of *Kala* is considered to be a significant factor in the growth and existence of epidemics.<sup>[6-8]</sup>

### Panchakarma as per Kala

There is a correlation between the time of day and the predominance of the different *Doshas*. For example, *Kapha* is predominant during early morning and late evening hours, which provides an opportunity to perform therapies such as *Vamana* and treatments for respiratory conditions. Since *Pitta* is predominant during the middle of the day and at midnight, the therapies performed during these hours (*Virechana*) and during febrile conditions would be appropriate. *Vata* is primarily predominant in the afternoon and nighttime hours; therefore, this would be the time to perform *Basti* therapy and treat neurological disorders. Similarly,

*Nasya* is preferred first thing in the morning because of optimal sensory activity, while *Raktamokshana* is recommended in early period of afternoon, when *Rakta* and *Pitta* are at physiologically highest.<sup>[7-9]</sup>

### Role of Kala in Treatment Stages

There are also several examples of how treatments are time based for different conditions.

- ✚ In *Jwara*, *Langhana* is recommended to be performed during the *Ama* stage, followed by *Kashaya* and *Ghruta* are to be administered at the beginning of the disease process.
- ✚ In *Grahani*, treatment is divided into several stages including *Malapachana*, *Doshapachana* with *Langhana*, *Agnidipana* and *Grahani-Balya* therapy over a period of several months.
- ✚ In *Udara Vyadhi*, the diet provided during the disease process is structured by the progression of the disease; that is, during the initial stages, a milk based diet is prescribed, followed by *Peya* and then different grains administered with milk.

Similarly Ayurveda mentioned duration and seasonal timing for prescribing specific medicines, which maximize the therapeutic benefit by matching treatment to the right temporal factors (*Kala*), disease stage and personal constitution (**Table 1**). Administering medicine at appropriate times according to the *Kala* improves absorption of drugs, facilitates optimal elimination of *Doshas*, improves tissue response to treatment, and reduces adverse effects of treatment.<sup>[8-10]</sup>

**Table 1: Duration and seasonal timing for prescribing specific medicines.**

Ayurvedic Formulation	Recommended Duration/Kala	Indications	Benefits
<i>Arogyavardhini Vati</i>	Approximately 48 days	Liver and skin diseases as well as <i>Pitta-Kapha</i> conditions	Promotes detoxification, restore <i>Doshic</i> balance.
<i>Guggulu Preparations</i>	Approximately 21 days	Musculoskeletal and metabolic disorders	Improves joint health, supports metabolic regulation.
<i>Vardhamana Pippali Rasayana</i>	Administered during <i>Sharad Ritu</i> and <i>Hemanta Ritu</i>	Respiratory disorders and for rejuvenation purpose	Improves immunity, provides rejuvenative benefits.

**CONCLUSION**

*Kala* is an important clinical variable that has an actionable role to play in Ayurvedic medicine. *Kala* also affects how we diagnose, prevent, and prognose illnesses, as well as how we plan treatments. By incorporating *Kala* into the therapeutic decision making process, the efficacy of treatment can be improved and the occurrence of adverse reactions can be minimized while maintaining harmony between biological processes and the natural rhythms of the environment. The parallels between Ayurvedic concepts of *Kala* and contemporary chronobiology highlight the scientific basis for a discipline called time based medicine. By using these principles alongside today's healthcare system, there is potential to create a new paradigm for healthcare delivery, which integrates Ayurvedic principles for individualized treatment, preventative care, and chronotherapeutic management for disease.

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