



Review Article

## PRAKRUT KARMA OF PITTA DOSHA: CLASSICAL FUNCTIONS AND MODERN BIOMEDICAL CORRELATIONS

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### ABSTRACT

**Objective:** To systematically review the classical Ayurvedic literature and modern biomedical perspectives concerning the *Prakrut Karma of Pitta*, correlating its described activities with established physiological mechanisms. **Methods:** A qualitative, literature-based methodology was employed, synthesizing Sanskrit sources and contemporary scientific literature. Primary references were extracted from the *Brihatrayi* and authoritative Ayurvedic texts, then compared and correlated with biomedical data on enzymatic digestion, bile metabolism, thermoregulation, hormone activity, neurotransmission, and cellular energy production. **Results:** Findings indicate that physiological actions of *Pitta* serve as a conceptual bridge between traditional Ayurvedic reasoning and modern metabolic science. Classical Ayurvedic functions of *Pitta* closely align with mechanisms such as digestive enzyme activity, bile secretion, metabolic oxidation, and neural regulation. These functions have direct implications for understanding metabolism, thermoregulation, and neurophysiology in contemporary terms. **Conclusions:** Understanding the *Prakrut Karma of Pitta* enriches holistic approaches to health and underscores the enduring relevance of Ayurvedic physiology in modern biomedical discourse. Integrative insights can inform preventive medicine, personalized healthcare, and the development of new clinical strategies, emphasizing the significance of *Pitta* in maintaining systemic balance and wellness.

### INTRODUCTION

*Pitta*, one of the *Tridosha* [1] described in Ayurveda, represents the principle of transformation that governs vital physiological processes in the human body. It plays a central role in metabolism, digestion, thermoregulation, perception, and homeostasis due to its dominance of the *Agni Mahabhuta* [2]. The *Prakrut Karma of Pitta* [3] refers to its natural, balanced functions, including digestion (*Pachana*), absorption, vision (*Darshana*), complexion (*Varna Prasadana*), intellect (*Medha*), and courage (*Dhairya*) [4].

The *Tridosha* theory *Vata*, *Pitta*, and *Kapha* forms the cornerstone of Ayurvedic physiology and

pathology, explaining every biological process and its deviation in disease [5]. Of these, *Pitta Dosha* represents the principle of transformation (*Agni Mahabhuta Pradhana Dosha*), responsible for conversion and regulation at both the physical and psychological levels. In its *Prakrut* (natural and balanced) state, *Pitta* governs vital functions such as digestion (*Pachana*), vision (*Darshana*), complexion (*Varna Prasadana*), intellect (*Medha*), and emotional steadiness (*Dhairya*), thereby maintaining systemic homeostasis.

The etymological root of the term *Pitta* arises from the Sanskrit verb "*Tap*," meaning "to heat" or "to transform." As stated in the *Sushruta Samhita* [6], "तप सऽतापे" - indicating its intrinsic association with thermal and transformative activities. Classical grammarians and commentators like *Chakrapani* and *Amarasimha* have emphasized that this heat is not physical combustion but the dynamic process of *Paka* or *Parinama*, referring to physiological conversion, oxidation, and transformation within the

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body. The *Siddhanta Kaumudi* further explains- “तापयित दहित भु-माहारजातिमित िप1म्,” meaning that *Pitta* “cooks” or metabolizes ingested food. Similarly, the *Shabdakalpadruma* notes, underscoring that the body is sustained in its balanced state by *Pitta* and destroyed when it becomes deranged.

Ayurvedic texts classify *Pitta* into five subtypes *Pachaka*, *Ranjaka*, *Sadhaka*, *Alochaka*, and *Bhrajaka* each responsible for specific physiological roles, including digestion, blood formation, mental and emotional functions, visual perception, and regulation of body temperature. Collectively, they exemplify *Pitta*'s pervasive role in energy metabolism and psychophysiological balance. The *Sara Guna* of *Pitta*<sup>7]</sup> enables the distribution of metabolic heat and nutrients throughout the body, ensuring continuous biochemical transformations essential for life.

Contemporary biomedical science offers compelling parallels to these classical insights. The processes governed by *Pitta* align closely with enzymatic catalysis, bile secretion, hormonal control, neurotransmission, and cellular energy metabolism. For example, *Pachaka Pitta* can be compared to gastric enzymes and hydrochloric acid facilitating digestion, while *Sadhaka Pitta* mirrors neuroendocrine regulation affecting cognition and emotional responses. Research in genetics and biochemistry has revealed that individuals exhibiting *Pitta*-dominant *Prakriti* often demonstrate higher basal metabolic rates, active hepatic metabolism, and neurochemical profiles rich in dopamine and serotonin parameters linked to dynamic and transformative attributes of *Pitta*.

This synthesis of traditional and modern perspectives enriches our comprehension of *Prakrut Karma* of *Pitta* and its relevance in maintaining physiological equilibrium. It underscores how classical Ayurvedic theory anticipates many contemporary biomedical concepts related to metabolism, thermoregulation, and neurophysiology. Understanding natural state of *Pitta* not only deepens insight into health and disease mechanisms but also guides preventive and personalized healthcare strategies. By bridging Ayurveda's ancient wisdom with current scientific evidence, this review aims to illuminate the integrative role of *Pitta* in sustaining life, balance, and wellbeing.

#### AIM AND OBJECTIVES

- To review the classical description of *Prakrut Karma* of *Pitta* from Ayurvedic texts.
- To correlate *Pitta*'s physiological actions with modern biomedical principles.
- To analyze existing research and clinical evidence

concerning *Pitta Prakrut Karma*.

#### MATERIAL

This review draws on classical Ayurvedic literature and contemporary research articles to examine the physiological and functional aspects of *Pitta*. Additionally, modern biomedical studies from databases such as PubMed Central (PMC) were reviewed to explore correlations with metabolism, thermoregulation, enzymatic activity, and neuroendocrine functions.

#### METHODS

- A qualitative literature review strategy was employed:
- Extraction and synthesis of *Prakrut Karma* from primary texts.
- Review of clinical, experimental, and theoretical articles from PubMed, AYUSH digital libraries, and Ayurveda journals.
- Comparative analysis with biomedical data on metabolic rate, digestion, thermoregulation, and emotion.
- Exclusion of *Bheda*-specific studies for focused discussion.

#### *Pitta* Dosha Functions

As per Ayurveda, *Pitta* has been described as *Agni*, since it performs fire like action i.e. *Paka* which refers to *Pachana* (digestion), *Dahana* (burning combustion) or oxidation including *Bhinna Samghata* (splitting), *Tapana* (heat production), *Parinamana* (conversion), *Paravritti* (transformation), *Prakashana* (illumination), *Ranjana* or *Varnakara* (coloration) and *Prabhakar* (to cause lustre). *Vagbhatta* has described that diseases occur due to abnormality of *Agni*. Lifespan, health, nourishment, color *Oja*, *Ranjaka Agni*, *Dhatvagni*, *Bhutagni* and all other *Agni* are dependent upon *Pachaka Pitta*. On reviewing functions of *Pitta Dosha* described in various texts the functions of *Pitta Dosha* can be summarized in following categories:

##### 1. *Pakti*

As per Ayurveda, *Pitta* has been described as *Agni*, the principle of transformation that performs fire-like actions such as *Paka*, *Parinamana* and *Paravritti*. These processes collectively represent *Pakti* the conversion of ingested food into assimilable nutrients and the elimination of waste. *Pitta*, by virtue of its inherent heat and liquidity, governs both gross and subtle levels of metabolism, beginning with *Jatharagni* and extending to *Bhutagni* and *Dhatvagni*.

##### *Daha*

Another vital function of *Pitta* is *Daha*, representing the burning or destructive aspect of metabolism. *Pitta*, especially in its form as *Prakrut Pitta*, facilitates the neutralization and destruction of

harmful or unwanted substances through catabolic and oxidative processes.

### **Kshut, Trishna, Annaruchi**

In Ayurveda, the sensations of *Kshut* (hunger), *Trishna* (thirst), and *Annaruchi* (appetite/desire for food) are considered natural, healthy expressions of *Pitta dosha's* balanced function. The timely and appropriate feeling of hunger and thirst is a direct function of normal *Pitta*, especially *Pachaka Pitta*, which governs *Agni* (digestive fire). It indicates the proper digestion of previous meals and readiness for new nourishment. A regular sense of hunger is a classical sign of good health and the strength of *Agni*, all sustained by *Pitta's* inherent heat. Desire for food is directly related to the status of *Agni* and functional *Pitta*.

### **Ushma**

*Ushma*, or heat generation, is an essential manifestation of *Agneya Savroop* of *Pitta*. *Bhrajaka Pitta* in particular contributes to it.

### **Varna, Prabha, Tanumardavam**

*Pitta* is responsible for maintaining the natural color or hue of the skin. Proper function of *Pitta* helps maintain pigmentation and a vibrant complexion. The subtle glow or radiance (*Prabha*) seen in healthy skin is due to *Pitta*. "*Tanumardavam*" refers to the softness, suppleness, and delicacy of the bodily tissues, especially the skin. It is one of the natural functions (*Karma*) of *Pitta dosha*.

### **Srava, Kleda, Kotha, Sweda**

*Pitta* primarily possesses *Sarata* but it also contains *Agneya Ansha*. *Srava, Kleda, Kotha, Sweda* are considered natural manifestations of *Pitta karma*. *Srava* denotes the tendency of *Pitta* to produce secretions or discharges within the body, maintaining necessary fluid movement. *Kleda* represents the natural moisture or liquidity that *Pitta* sustains for proper metabolic activities and tissue nourishment. *Kotha* refers to inflammatory eruptions arise due to *Pitta*, showing its strong transformative and heating properties. *Sveda*, or sweating, is another vital function of *Pitta*.

### **Drishti**

*Drishti*, or visual perception, is governed by *Alochaka Pitta* located in the eyes. This *Pitta* subtype is responsible for the perception of form and colour, integrating external light with internal *Tejas*.

### **Buddhi, Medha**

*Sadhaka Pitta*, located in the heart, governs higher mental faculties such as *Buddhi, Medha*. Classical Ayurvedic thought associates these traits with luminous and transformative properties of *Pitta*,

which dispel mental inertia (*Tamas*) and promote clarity (*Sattva*).

### **Raga, Tejas, Ojas**

In Ayurveda, *Raga, Tejas*, and *Ojas* are important manifestations influenced by the *Karma* (functions) of *Pitta Dosha*. *Raga* refers to the natural coloration or healthy complexion of the body and is maintained by the balanced heat of *Pitta*. *Tejas* is the subtle essence of *Pitta* that governs *Agni*, responsible for transformation at physical and mental levels, giving brilliance, intelligence, and vitality. *Ojas*, the supreme essence of all *Dhatu*, depends on proper digestion and metabolism regulated by *Pitta*; only when *Pitta* functions normally can pure *Ojas* be formed.

## **DISCUSSION**

In Ayurveda, *Pitta Dosha* represents the transformative force of the body, governing all processes related to digestion, metabolism, perception, and energy regulation. When *Pitta* functions in balance, it upholds health, vitality, and harmony within the system; however, its disturbance results in various physiological and metabolic disorders. The *Pitta Karma* can be interpreted through traditional Ayurvedic concepts as well as modern scientific correlations.

### **1. Digestion and Metabolism (Pakti)**

The *Agni* residing within *Pitta* is responsible for breaking down complex food substances into simpler forms suitable for tissue nourishment, mirroring enzymatic hydrolysis and mitochondrial metabolism. Balanced *Pitta* ensures effective digestion, absorption, and energy production, while its derangement leads to metabolic disorders, indigestion, and nutritional deficiencies.

### **2. Combustion and Detoxification (Daha)**

This correlates with hepatic detoxification, phagocytic activity, and immune defence mechanisms that eliminate toxins and pathogens. Classical texts describe this as a cleansing fire that purifies the internal environment, maintaining systemic purity and balance. From a physiological perspective, these actions correspond to enzymatic oxidation, cellular detoxification, and metabolic clearance of free radicals and microbial by-products.

### **3. Regulation of Hunger, Thirst, and Appetite (Kshut, Trishna, Annaruchi)**

*Pitta* governs the sensations of hunger, thirst, and taste preference all of which signal the physiological of body need for nourishment and hydration. These sensations arise from fluctuations in digestive fire and tissue depletion. Classical Ayurvedic theory interprets these drives as reflections of the homeostatic equilibrium of *Agni*. Modern correlates

include hypothalamic regulation of hunger and thirst, hormonal signalling through ghrelin and leptin, and feedback mechanisms maintaining energy and fluid balance. Properly balanced *Pitta* maintains timely appetite and thirst, while imbalance leads to anorexia, polydipsia, or irregular cravings, indicative of disturbed metabolic signalling.

#### 4. Thermoregulation (*Ushma*)

It maintains optimal body temperature necessary for enzymatic activity and metabolic processes. Classical literature emphasizes that life depends on balanced body heat excess leading to fever and inflammation, deficiency to sluggish metabolism or even death. *Bhrajaka Pitta* in particular contributes to thermoregulation through the skin. Modern science parallels this concept with thermogenesis, mitochondrial ATP production, and hypothalamic control of body temperature. *Pitta's* balanced heat supports digestion, circulation, and tissue function, while excessive heat may manifest as inflammation or hypermetabolic states.

#### 5. Skin Coloration, Lustre, and Softness (*Varna, Prabha, Tanumardavam*)

*Pitta* also governs the qualities of skin color, radiance, and softness through its subtypes *Ranjaka* and *Bhrajaka Pitta*. These functions determine complexion, pigmentation, and skin texture. Ayurvedic descriptions of *Varna* and *Prabha* correspond to modern concepts of melanin regulation, hemoglobin synthesis, tissue oxygenation, and collagen maintenance. *Tanumardavam*, the delicacy or softness of tissues, is attributed to the *Sneha* quality of *Pitta*, ensuring suppleness and elasticity. Disturbances in these functions manifest as pallor, dullness, or inflammatory skin changes. Scientifically, these correlate with oxidative balance, dermal hydration, and microcirculatory health.

#### 6. Fluidity and Secretions (*Srava, Kleda, Kotha, Sweda*)

This nature of *Pitta* enables proper secretion and fluid regulation within the body. It governs the production of *Sweda*, bile, digestive juices, and other secretions necessary for metabolic and excretory balance. These functions prevent tissue dryness and support enzymatic reactions. Classical texts describe *Kleda* and *Srava* as mechanisms that maintain physiological fluidity, while *Kotha* refers to suppurative processes seen in pathological conditions. In modern physiological terms, these actions correspond to glandular secretions, inflammatory exudates, hydrolytic enzyme activity, and thermoregulatory sweating. Proper *Pitta* function ensures smooth metabolic and excretory processes,

while its excess can cause excessive perspiration, ulceration, or inflammation.

#### 7. Vision (*Drishti*)

*Drishti*, or visual perception, is governed by *Alochaka Pitta* located in the eyes. *Alochaka Pitta* is explained as having two distinct functional aspects. *Alochaka Pitta* plays a fundamental role in vision and higher cognitive processes and is described as having two distinct functional components. *Chakshu Vaisheshika Alochaka Pitta* is associated with the eye and is responsible for perceiving visual stimuli from the external environment, enabling recognition, discrimination, and comprehension of visual forms. The second component, located in the *Sringhataka* region between the eyebrows, governs the central regulation of vision and corresponds to higher visual processing centres of the brain. This aspect facilitates the retention, interpretation, and recall of visual information through memory and cognition. The process of vision is dependent upon the purity and functional strength of this inner *Pitta*. From a modern scientific perspective, these functions correlate with phototransduction mechanisms in the retina, retinal pigment activity, and optic nerve signalling to the visual cortex. Photochemicals, enzymes, and neurotransmitters involved in the optic pathway perform roles comparable to *Alochaka Pitta*. Visual pigments such as rhodopsin, iodopsin, and their intermediate forms support visual perception, while neurotransmitters mediating cortical and subcortical communication represent *Buddhi Vaisheshika Alochaka Pitta*. Disturbances of *Pitta* result in visual impairment, photophobia, or reduced clarity, which parallels retinal oxidative stress and neurosensory fatigue described in modern medicine. Thus, *Pitta* plays a crucial role in maintaining ocular health and visual acuity.

#### 8. Cognitive and Emotional Functions (*Buddhi, Medha*)

*Sadhaka Pitta*, located in the heart, governs higher mental faculties such as *Buddhi, Medha*, decision-making, courage, and emotional balance. Classical Ayurvedic thought associates these traits with luminous and transformative properties of *Pitta*, which dispel mental inertia (*Tamas*) and promote clarity (*Sattva*). Influence of *Pitta* extends to emotional states such as enthusiasm, anger, fear, and joy, reflecting its role in maintaining psychological equilibrium. From a modern neurophysiological perspective, this function corresponds to neurotransmitter balance, limbic system activity, cognitive processing, and psychoneuroimmunological regulation. Balanced *Sadhaka Pitta* contributes to

sharp intellect, emotional stability, and mental resilience.

### 9. Color, Vitality, and Ojas (*Raga, Tejas, Ojas*)

*Pitta* imparts vitality, radiance, and systemic energy through its association with *Raga, Teja* and *Oja*. These three represent the interplay between metabolic energy, physical vigour, and immune strength. Classical texts regard *Teja* as the subtle essence of *Agni*, sustaining brightness and vitality, while *Oja* signifies overall strength and immunity. Biomedically, these functions parallel oxidative metabolism, haemoglobin oxygenation, and systemic vitality markers. Balanced *Pitta* maintains physical stamina, bright complexion, and mental alertness, whereas imbalance can lead to fatigue, pallor, or reduced vitality.

### CONCLUSION

*Prakrut Karma* of *Pitta* plays a central role in maintaining health by regulating digestion, metabolism, thermoregulation, perception, cognition, and the aesthetic qualities of the body. Its balanced state ensures harmony across metabolic, sensory, and emotional systems.

Integrating Ayurvedic perspectives with modern biomedical insights such as enzymatic activity, thermogenesis, and neurophysiology underscores the holistic significance of *Pitta*. Applying this understanding in preventive medicine and personalized healthcare can enhance well-being, longevity, and disease prevention. Continued integrative research will further validate and expand the practical relevance of *Pitta* for contemporary clinicians and scientists.

### Limitation

The conceptual correlations presented are based on interpretative understanding. Further experimental and molecular research is required to scientifically validate and strengthen the integration between Ayurvedic principles and biomedical concepts.

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