

Concept of Ojas and its Correlation with Immunity: An Evidence-Based Review

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Abstract—Ojas is one of the most fundamental concepts in Ayurveda and is regarded as the essence of all the seven Dhatus (body tissues). It represents the vital force responsible for maintaining physical strength, mental stability, vitality, and resistance against diseases. Classical Ayurvedic texts describe Ojas as the substratum of Bala (strength) and Vyadhikshamatva (immunity), emphasizing its indispensable role in sustaining health and longevity. Contemporary biomedical science recognizes immunity as a complex network of innate and adaptive defense mechanisms that protect the body against pathogens and maintain physiological homeostasis. Although the terminologies differ, several functional similarities exist between the Ayurvedic concept of Ojas and the modern understanding of immune competence. This evidence-based review aims to explore the classical descriptions of Ojas in major Ayurvedic texts and critically correlate them with current concepts of immunology. Relevant literature was collected from classical Ayurvedic treatises, peer-reviewed journals, and electronic databases to evaluate the physiological attributes, determinants, depletion, and preservation of Ojas in relation to immune function. The review highlights that adequate nutrition, balanced Agni (digestive and metabolic fire), proper lifestyle, Rasayana therapy, and mental well-being contribute significantly to the maintenance of Ojas and enhancement of immune resilience. Conversely, stress, malnutrition, chronic illness, and unhealthy lifestyle practices lead to Ojas depletion, increasing susceptibility to diseases. Emerging scientific evidence supports the immunomodulatory potential of several Ayurvedic Rasayana drugs traditionally prescribed for Ojas enhancement. Integrating the Ayurvedic concept of Ojas with contemporary immunological knowledge may provide a holistic framework for disease prevention, health promotion, and personalized integrative healthcare. Further clinical and molecular research is warranted to

establish stronger scientific evidence supporting this traditional concept.

Index Terms—Ojas, Immunity, Vyadhikshamatva, Bala, Rasayana, Ayurveda, Agni, Dhatu, Immunomodulation, Integrative Medicine.

I. INTRODUCTION

Ayurveda, the ancient science of life, emphasizes the preservation of health and prevention of disease through the maintenance of equilibrium among Dosha, Dhatu, Mala, Agni, and Manas. Among these physiological components, Ojas occupies a unique position as the supreme essence (*Sara*) of all the seven Dhatus and is regarded as the very basis of life. Classical Ayurvedic literature describes Ojas as the substratum of Bala (strength), Vyadhikshamatva (immunity), vitality, mental stability, and longevity. It is considered indispensable for sustaining normal physiological functions, and its depletion leads to diminished resistance against diseases, weakness, and ultimately death.¹

The concept of Vyadhikshamatva, explained in Ayurveda, refers to the intrinsic capability of the body to resist disease. It comprises two important aspects: prevention of disease occurrence (*Vyadhi-utpada Pratibandhakatva*) and the ability to counteract the severity and progression of manifested diseases (*Vyadhi Bala Virodhitva*).² This concept closely resembles the modern understanding of immunity, which encompasses innate and adaptive defense mechanisms that protect the body against pathogens while maintaining internal homeostasis.³

The increasing burden of infectious diseases, autoimmune disorders, metabolic syndrome, malignancies, and emerging viral infections has highlighted the significance of a well-functioning immune system. Modern immunology describes immunity as a highly coordinated defense network involving anatomical barriers, immune cells, cytokines, antibodies, complement proteins, and molecular signaling pathways that collectively recognize and eliminate foreign antigens.⁴ The efficiency of immune responses depends upon genetic, nutritional, environmental, endocrine, and psychological factors that regulate immune homeostasis.⁵

Interestingly, Ayurveda has described these determinants of health several millennia ago through the concepts of Agni, Ahara, Vihara, Satmya, Dinacharya, Ritucharya, and Rasayana Chikitsa, all of which ultimately contribute to the formation and preservation of Ojas.⁶ Balanced digestion and metabolism ensure proper nourishment of Dhatus, culminating in the formation of healthy Ojas, whereas impaired Agni leads to the formation of Ama, tissue dysfunction, and reduced disease resistance.

Recent advances in integrative medicine have encouraged researchers to explore scientific correlations between classical Ayurvedic concepts and contemporary biomedical sciences. Several experimental and clinical studies have demonstrated that Ayurvedic Rasayana drugs such as *Tinospora cordifolia* (Guduchi), *Withania somnifera* (Ashwagandha), *Embllica officinalis* (Amalaki), and *Glycyrrhiza glabra* (Yashtimadhu) possess antioxidant, anti-inflammatory, adaptogenic, and immunomodulatory properties.⁷⁻⁹ These pharmacological actions provide a scientific basis for their traditional role in promoting Ojas and enhancing host defense mechanisms.

Although Ojas has frequently been interpreted as an equivalent of immunity, it is a much broader physiological concept encompassing tissue nourishment, metabolic integrity, neuroendocrine balance, psychological resilience, and immunological competence. Therefore, correlating Ojas solely with immune cells or antibodies oversimplifies its multidimensional nature. Contemporary systems biology, which recognizes health as the coordinated interaction of multiple physiological networks,

provides an appropriate framework for understanding Ojas from an integrative perspective.¹⁰

Despite growing scientific interest, comprehensive reviews integrating classical Ayurvedic descriptions of Ojas with current immunological evidence remain limited. Hence, the present review critically analyzes the concept of Ojas described in classical Ayurvedic texts and correlates it with the modern understanding of immunity based on available experimental, clinical, and translational evidence.

II. MATERIALS AND METHODS (LITERATURE SEARCH STRATEGY)

The present article is an evidence-based narrative review conducted through a comprehensive analysis of classical Ayurvedic literature and contemporary biomedical publications. Classical references pertaining to Ojas, Bala, Vyadhikshamatva, Rasayana, Agni, Dhātu, and immunity were collected from authoritative Ayurvedic texts, including Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, and Ashtanga Sangraha, along with their standard commentaries.^{11,12}

Electronic databases including PubMed, Scopus, Google Scholar, ScienceDirect, and the AYUSH Research Portal were searched for peer-reviewed articles published in English. The search was performed using combinations of the keywords: *Ojas*, *Vyadhikshamatva*, *Ayurveda and Immunity*, *Rasayana*, *Immunomodulation*, *Host Defense*, *Innate Immunity*, *Adaptive Immunity*, *Oxidative Stress*, and *Integrative Medicine*.

Original research articles, review articles, systematic reviews, experimental studies, and clinical trials evaluating the immunomodulatory effects of Ayurvedic formulations and Rasayana drugs were included. Studies lacking scientific methodology, duplicate publications, conference abstracts, and non-English articles were excluded. Information obtained from classical texts was critically interpreted and correlated with modern concepts of immunology to establish scientific relevance.

Concept of Ojas in Ayurveda

The term Ojas is derived from the Sanskrit root "Uj", which denotes brilliance, vigor, vitality, strength, and excellence. According to Ayurveda, Ojas is not merely

a material substance but the ultimate biological essence responsible for sustaining life.

Charaka Samhita describes Ojas as the Sara (quintessence) of all seven Dhatus and the principal factor responsible for Bala, Varna, enthusiasm, proper functioning of sensory organs, and resistance to diseases. It is stated that "*Ojah sarvadhātūnām param tejah*"—Ojas represents the supreme essence of all body tissues.

According to Sushruta Samhita, Ojas is a soft, unctuous, cool, slightly reddish-yellow substance residing primarily in the Hridaya (heart) and circulating throughout the body via the vascular channels to nourish every tissue. It continuously supports physiological functions and maintains the integrity of all organs.

Ashtanga Hridaya explains that Ojas is formed after the complete maturation of all seven Dhatus and therefore reflects optimal tissue metabolism and nutritional excellence.¹¹ Since it is the final product of Dhatu metabolism, any disturbance in Agni, Dosha equilibrium, tissue nutrition, or metabolic processes directly affects the quality and quantity of Ojas.

From a modern scientific viewpoint, Ojas may be interpreted as a comprehensive indicator of physiological resilience resulting from optimal nutrition, efficient metabolism, endocrine balance, antioxidant defense, neuroimmune regulation, and immune competence rather than a single anatomical or biochemical entity.

III. TYPES OF OJAS

Classical Ayurvedic literature classifies Ojas into two distinct forms based on quantity, location, and physiological significance.

1. Para Ojas

Para Ojas is the superior and most vital form of Ojas. According to Sushruta Samhita, it measures Ashta Bindu (eight drops) and is permanently situated within the Hridaya (heart).² It is considered indispensable for life, and even minimal depletion results in collapse of vital functions and death.

The major characteristics of Para Ojas include:

- Extremely subtle in nature
- Permanently located in the heart
- Responsible for sustaining life
- Maintains consciousness and vitality

- Essential for cardiovascular and neurological stability

Because of its life-sustaining role, Para Ojas is regarded as irreplaceable.

2. Apra Ojas

Apara Ojas, also known as Shleshmika Ojas, is distributed throughout the body and circulates via blood vessels. Classical texts describe its quantity as half an Anjali.

Unlike Para Ojas, Apara Ojas undergoes continuous physiological changes depending upon nutrition, age, psychological state, disease, lifestyle, and environmental factors. It performs several important physiological functions including nourishment of tissues, maintenance of strength, enhancement of immunity, tissue repair, and protection against diseases.

The dynamic behavior of Apara Ojas bears remarkable similarity to the functional adaptability of the modern immune system, which constantly responds to nutritional, environmental, and infectious stimuli.

Formation of Ojas

Ayurveda explains that Ojas is formed through the sequential metabolism and nourishment of the seven Dhatus. Following digestion by Jatharagni, food is transformed into Ahara Rasa, which nourishes Rasa Dhatu. Thereafter, each Dhatu undergoes metabolism by its respective Dhatvagni, producing its own tissue, waste products (*Kitta*), and nutritional fraction for the subsequent Dhatu.

After the complete maturation of Rasa, Rakta, Mamsa, Meda, Asthi, Majja, and Shukra, the finest and purest metabolic essence produced is Ojas. Thus, Ojas represents the culmination of efficient digestion, metabolism, and tissue nourishment.

Several physiological factors influence the formation of Ojas:

- Proper functioning of Jatharagni and Dhatvagni
- Balanced Tridosha
- Nutritious and wholesome diet
- Adequate sleep and rest
- Stable mental health
- Regular exercise
- Rasayana therapy
- Healthy lifestyle practices

Conversely, impaired digestion (*Mandagni*), formation of Ama, malnutrition, chronic stress, excessive physical exertion, aging, trauma, and prolonged illnesses adversely affect Ojas production, resulting in diminished vitality and increased susceptibility to diseases.

Properties and Functions of Ojas

Classical Ayurvedic texts describe Ojas as Madhura (sweet), Sheeta (cool), Snigdha (unctuous), Mridu (soft), Bahala (dense), Picchila (slimy), Prasanna (clear), and Guru (heavy) in nature. These qualities collectively contribute to tissue stability, nourishment, lubrication, vitality, and physiological balance.

The principal functions of Ojas include:

- Maintenance of physical strength (*Bala*)
- Enhancement of disease resistance (*Vyadhikshamatva*)
- Nourishment of all Dhatus
- Promotion of growth and development
- Preservation of mental stability and emotional well-being
- Maintenance of complexion (*Varna*)
- Facilitation of tissue repair and regeneration
- Promotion of longevity and reproductive health

Charaka states that Ojas is indispensable for normal physiological functioning, and individuals possessing excellent Ojas exhibit superior physical endurance, stable mental health, efficient metabolism, and remarkable resistance against diseases.

Ojas and Vyadhikshamatva (Immunity)

Among the various physiological functions attributed to Ojas, its relationship with Vyadhikshamatva occupies paramount importance. Ayurveda defines Vyadhikshamatva as the body's inherent ability to prevent disease and to minimize its severity once disease has developed.

The concept comprises two complementary components:

1. Vyadhi-utpada Pratibandhakatva – the capacity to prevent the occurrence of disease.
2. Vyadhi Bala Virodhitva – the capacity to resist the progression and severity of existing disease.

These principles closely resemble the concepts of immune surveillance, host resistance, immune regulation, and recovery mechanisms recognized in modern immunology. Individuals with optimum Ojas

are described as possessing excellent Bala, rapid wound healing, resistance to recurrent infections, stable mental health, proper tissue nourishment, and longevity. Conversely, depletion of Ojas (*Ojokshaya*) manifests as fatigue, recurrent infections, poor healing, loss of complexion, psychological instability, and progressive weakness.

From a modern perspective, these manifestations may correspond to impaired immune competence, chronic inflammation, oxidative stress, malnutrition, endocrine dysfunction, and reduced physiological resilience. Thus, Ojas can be considered a holistic indicator of systemic health that extends beyond the conventional concept of immunity alone.

Modern Concept of Immunity

Immunity is defined as the ability of the body to recognize, neutralize, and eliminate pathogenic microorganisms and other foreign substances while maintaining tolerance toward self-antigens. It is a highly coordinated biological defense mechanism involving anatomical barriers, specialized immune cells, cytokines, antibodies, complement proteins, and signaling molecules that collectively maintain homeostasis and protect the host from disease.¹³ The immune system not only defends against infectious pathogens but also participates in tissue repair, regulation of inflammation, surveillance against malignant cells, and maintenance of physiological equilibrium.¹⁴

Modern immunology classifies immunity into innate immunity and adaptive immunity, both of which function synergistically to provide effective host defense.

Innate Immunity

Innate immunity constitutes the first line of defense and is present from birth. It provides rapid, non-specific protection against invading microorganisms and environmental insults. Components of innate immunity include the skin, mucosal barriers, antimicrobial peptides, complement proteins, macrophages, neutrophils, dendritic cells, natural killer (NK) cells, and inflammatory mediators. Pattern recognition receptors (PRRs), such as Toll-like receptors (TLRs), identify pathogen-associated molecular patterns (PAMPs), initiating inflammatory and antimicrobial responses.¹⁵

The innate immune response is immediate and essential for limiting pathogen invasion until adaptive immunity becomes fully activated. In addition to pathogen clearance, innate immune cells release cytokines and chemokines that recruit other immune cells and facilitate tissue repair.

Adaptive Immunity

Adaptive immunity is characterized by antigen specificity, immunological memory, and long-lasting protection. It is mediated primarily by B lymphocytes and T lymphocytes. B cells produce antibodies that neutralize pathogens and facilitate their elimination, whereas T cells regulate immune responses and destroy infected or abnormal cells.

Following initial antigen exposure, memory B and T cells are generated, enabling a more rapid and efficient response upon subsequent exposure. This property forms the scientific basis of vaccination and long-term protective immunity.

The immune system is influenced by multiple physiological and environmental factors, including age, genetics, nutrition, endocrine function, sleep, stress, physical activity, and gut microbiota. Dysregulation of immune homeostasis contributes to infectious diseases, autoimmune disorders, hypersensitivity reactions, chronic inflammatory diseases, metabolic syndrome, and malignancies.¹⁶

Recent evidence has also highlighted the intimate relationship between the nervous, endocrine, and immune systems, collectively known as the neuro-endocrine-immune axis. Chronic psychological stress alters hypothalamic-pituitary-adrenal (HPA) axis activity, elevates cortisol secretion, suppresses immune responses, and increases susceptibility to infections.¹⁷ These observations closely resemble the Ayurvedic description that excessive mental stress (*Chinta*, *Shoka*, *Bhaya*) contributes to depletion of Ojas.

Correlation of Ojas with Modern Immunology

Although Ojas is often translated as "immunity," it represents a much broader biological concept than the modern immune system alone. Classical Ayurvedic literature attributes to Ojas multiple physiological functions including maintenance of strength, nourishment of tissues, mental stability, longevity, reproductive health, and disease resistance. These multidimensional functions closely resemble the

integrated regulation of immunity, metabolism, endocrine function, and neurophysiology recognized in modern biomedical science.

The process of Ojas formation begins with proper digestion and metabolism through the action of Jatharagni and Dhatvagni, resulting in efficient nourishment of all seven Dhatus. This sequential metabolic process can be correlated with nutrient absorption, cellular metabolism, protein synthesis, and maintenance of tissue integrity. Modern nutritional immunology similarly recognizes that adequate nutrition is essential for optimal immune cell development, cytokine synthesis, antibody production, and maintenance of mucosal barriers.¹⁸

Ayurveda describes balanced Agni as the foundation of health, whereas impaired Agni leads to the formation of Ama, which obstructs physiological channels (*Srotas*) and predisposes the body to disease. Contemporary medicine has identified chronic systemic inflammation, oxidative stress, metabolic endotoxemia, and intestinal dysbiosis as major contributors to immune dysfunction and chronic diseases.¹⁹ These pathological processes share conceptual similarities with the Ayurvedic description of Ama.

Another significant similarity lies in the concept of homeostasis. Modern physiology emphasizes that health depends upon the maintenance of internal equilibrium through coordinated interactions among the nervous, endocrine, metabolic, and immune systems.²⁰ Likewise, Ayurveda considers Ojas as the stabilizing force responsible for preserving equilibrium among Dosha, Dhatu, Agni, and mental functions.

The psychological dimensions of Ojas also parallel current understanding of psychoneuroimmunology. Classical texts state that emotions such as fear, grief, anger, excessive anxiety, and mental exhaustion gradually diminish Ojas. Modern research has demonstrated that chronic psychological stress suppresses cellular immunity, increases inflammatory cytokines, impairs vaccine responses, delays wound healing, and enhances susceptibility to infections.

Similarly, adequate sleep, balanced nutrition, regular exercise, and mental well-being are considered essential for preservation of Ojas. Contemporary studies consistently report that these lifestyle factors improve immune surveillance, regulate inflammatory

mediators, enhance antioxidant defense mechanisms, and reduce oxidative stress.

From an integrative perspective, Ojas may therefore be viewed as a holistic physiological state reflecting optimal tissue nutrition, efficient metabolism, neuroendocrine balance, antioxidant capacity, immune competence, psychological resilience, and systemic homeostasis rather than a single anatomical structure or biochemical molecule.

Evidence on Rasayana Drugs and Immunomodulation
Rasayana Chikitsa is one of the eight major branches of Ayurveda and is specifically aimed at promoting longevity, improving vitality, enhancing Ojas, delaying ageing, and increasing resistance against diseases. Classical texts describe Rasayana therapy as a means to improve the quality of Dhatus, strengthen Agni, nourish Ojas, and promote Vyadhikshamatva. Modern pharmacological investigations have provided substantial evidence supporting these traditional claims.

Guduchi (*Tinospora cordifolia*)

Guduchi is one of the most extensively investigated Rasayana drugs for immunomodulatory activity. Experimental studies have demonstrated that Guduchi enhances macrophage activation, increases phagocytic activity, stimulates cytokine production, augments natural killer cell function, and improves antibody responses.²¹ Its antioxidant and anti-inflammatory properties further contribute to protection against oxidative tissue injury and immune dysfunction.

Ashwagandha (*Withania somnifera*)

Ashwagandha possesses potent adaptogenic, antioxidant, anti-inflammatory, and immunomodulatory effects. Clinical and experimental studies have reported increased lymphocyte proliferation, enhanced natural killer cell activity, improved antibody production, and reduction of stress-induced immunosuppression following Ashwagandha administration.²² Its ability to regulate the hypothalamic-pituitary-adrenal axis provides additional benefits by reducing chronic stress, an important factor responsible for Ojas depletion.

Amalaki (*Emblica officinalis*)

Amalaki is considered one of the foremost Rasayana drugs due to its high antioxidant potential. Rich in

vitamin C, polyphenols, flavonoids, and tannins, it scavenges reactive oxygen species, reduces oxidative stress, modulates inflammatory pathways, and supports normal immune function.²³ Experimental evidence also indicates enhancement of macrophage activity and improvement in antioxidant enzyme systems.

Yashtimadhu (*Glycyrrhiza glabra*)

Yashtimadhu contains glycyrrhizin and flavonoids possessing antiviral, antioxidant, anti-inflammatory, and immunomodulatory properties. Several studies have demonstrated its ability to regulate cytokine production, inhibit viral replication, and reduce inflammatory tissue damage.²⁴ These pharmacological actions support its classical indication as an Ojas-promoting drug.

Other Rasayana Drugs

Other important Rasayana drugs including Shatavari (*Asparagus racemosus*), Pippali (*Piper longum*), Haritaki (*Terminalia chebula*), and Chyawanprasha have also demonstrated significant immunomodulatory, antioxidant, adaptogenic, and anti-ageing properties in experimental and clinical studies.²⁵ These herbal interventions improve both innate and adaptive immune responses while simultaneously enhancing nutritional status, metabolic efficiency, and resistance to oxidative stress.

Collectively, the available scientific evidence indicates that Rasayana therapy exerts multidimensional biological effects extending beyond conventional immune stimulation. Their ability to regulate inflammatory pathways, improve antioxidant defense, reduce stress-induced immune suppression, promote tissue repair, and enhance physiological resilience strongly supports the Ayurvedic concept that Rasayana drugs preserve and augment Ojas.

IV. DISCUSSION

The present review demonstrates that the Ayurvedic concept of Ojas shares significant functional similarities with the modern concept of immunity. Classical texts describe Ojas as the essence of all seven Dhatus, responsible for maintaining Bala, Vyadhikshamatva, vitality, and overall health. Modern immunology likewise recognizes that effective immune function depends on adequate nutrition, metabolic balance, neuroendocrine regulation, and

psychological well-being. Scientific evidence further supports the immunomodulatory, antioxidant, and adaptogenic properties of several Rasayana drugs, including *Tinospora cordifolia*, *Withania somnifera*, and *Emblica officinalis*, which may contribute to improved immune responses and physiological resilience. Although Ojas cannot be directly equated with any single immunological component, it can be interpreted as a holistic indicator of systemic health and host defense. However, further well-designed clinical and molecular studies are required to establish objective biomarkers and strengthen the scientific correlation between Ojas and modern immunity.

V. CONCLUSION

Ojas is a fundamental Ayurvedic concept representing the essence of all Dhatus and the basis of strength, vitality, and disease resistance. Its functions closely parallel several aspects of the modern immune system, including maintenance of host defense, physiological homeostasis, and resilience against disease. Current scientific evidence supports the role of Rasayana therapy in enhancing immune function through antioxidant, anti-inflammatory, and immunomodulatory mechanisms. Integrating the Ayurvedic concept of Ojas with contemporary immunological knowledge may provide a comprehensive approach to preventive healthcare and immune enhancement. Further evidence-based research is needed to validate these correlations and facilitate the integration of Ayurveda into modern healthcare systems.

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