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Atharvaveda Sūkta 1.22 and the Concept of Hyperbiliverdinemia: A Textual Study in Dialogue with Modern Biomedicine

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Abstract:

The *Ḥṛdroga-kāmila-nāśana Sūktam* of the Atharvaveda (1.22) represents one of the earliest textual articulations of disease recognition and therapeutic practice in the Vedic corpus. This research study undertakes a comparative textual-scientific analysis, correlating the *sūkta's* descriptions of *harimā/kāmila* (green jaundice) and associated *hṛdroga* (cardiac complications) with modern biomedical concepts of hyperbiliverdinemia and cardiovascular pathology. The text situates healing within natural agents such as sunlight and bovine elements while symbolically transferring pathological pigmentation into birds, where biliverdin is physiologically tolerated. Contemporary parallels include phototherapy for neonatal jaundice, cardiovascular benefits of controlled solar exposure, bovine dermal scaffolds in reconstructive medicine, and avian biliverdin metabolism. The interdisciplinary synthesis suggests that the Atharvavedic text, though couched in ritual language, may encode observations that can be interpreted alongside biomedical phenomena. This convergence underscores the relevance of re-examining traditional texts not merely as cultural artifacts but as repositories of proto-scientific insight, offering valuable conceptual frameworks for integrative and interdisciplinary research in traditional and modern medicine.

Keywords: Atharvaveda, *Ḥṛdroga-kāmila-nāśana Sūktam*, Hyperbiliverdinemia (Green Jaundice), Biliverdin metabolism, Phototherapy and sunlight therapy, Bovine dermal scaffolds, Integrative medicine, Traditional Indian medical thought

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INTRODUCTION

The *Atharvaveda* Sūkta – 1.22, designated as the *Ḥṛdroga-kāmila-nāśana Sūktam*, represents an early articulation of disease recognition and therapeutic practice in the Vedic corpus. The *sūkta* addresses *Harimā/Kāmila* (kind of a jaundice) (Radhika et. al., 2023), and its potential association with *ḥṛdroga* (cardiac complications). The verses describe both the pathological manifestation of biliverdin accumulation leading to greenish discoloration of the skin and the systemic consequences that may extend to cardiovascular distress.

Therapeutic Framework in the Vedic Text

The *sūkta* situates its healing modality within natural agents, particularly sunlight and bovine elements. The red rays of the sun are invoked as restorative forces that rejuvenate complexion and vitality, while the red-coloured cow symbolizes the infusion of healthy dermal qualities into the patient. Furthermore, the *sūkta* cites the transfer of pathological green pigmentation from humans to birds such as parrots, suggesting a transference of disease burden into a domain where biliverdin is physiologically tolerated.

METHODOLOGICAL APPROACH

This study adopts a comparative textual-scientific methodology to examine the Atharvavedic *sūkta* alongside modern biomedical research. The approach involves:

- **Philological Analysis:** Close reading of the Sanskrit text, with attention to semantic nuances of terms such as *go* (cow/sunrays) and *devatyāḥ* (sun), supported by traditional commentaries including the *Sāyaṇa Bhāṣya*.
- **Biomedical Correlation:** Mapping the descriptions of disease and therapy in the *sūkta* to the similar contemporary medical concepts such as hyperbiliverdinemia, phototherapy, cardiovascular pathology, and reconstructive dermatology.
- **Interdisciplinary Synthesis:** Drawing parallels between Vedic imagery (e.g., transfer of pigmentation to birds) and modern experimental findings on avian biliverdin metabolism, thereby highlighting continuities and divergences across knowledge systems.

This methodological integration allows for a nuanced future exploration of how ancient therapeutic practices resonate with modern scientific practices, while respecting the distinct epistemological frameworks of Vedic tradition and biomedical science.

AYURVEDIC TERMS USED IN ATHARVAVEDA 1.22

- ***Kāmila*:** In Ayurveda, *Kāmila* or *Kāmala Vyādhi* is a clinical condition that primarily affects the liver and blood, characterized by a yellowish discoloration of the eyes, skin, and nails. It is most closely correlated with jaundice in modern medicine. According to

Ayurveda texts, *Kāmala* is considered a manifestation of *Pitta* and *Raktavāha Srotas* disorders (Kamala, A. D. P. O., 2025). *Caraka Samhitā*, *Cikitsā Sthāna* 16.35 explicitly links the yellowing of the eyes, skin, nails, and face with the discoloration of excreta, forming the exact clinical profile used to identify jaundice across medical systems.

- ***Harimā*:** The term *Harima* is the Vedic precursor to the Ayurvedic clinical entity of *Kāmala*. While *Kāmala* is the term used in classical *Samhitas* (*Charaka*, *Sushruta*), *Harimā* is the specific term used in the Atharvaveda to identify the same pathological condition.

ḤṚDROGA-KĀMILA-NĀŚANA-SŪKTAM OF THE ATHARVAVEDA (1.22)

अनु सूर्यमुदयतां हृद्द्योतो हरिमा च ते ।
गो रोहितस्य वर्णेन तेन त्वा परि दध्मसि ॥ (1.22.1)
anu sūryamudayatāṃ hṛddyoto harimā ca te .
go rohitasya varṇena tena tvā pari dadhmasi ..

The first *mantra* of this *sūkta* constitutes a prayer directed toward the alleviation of *Harimā* or *Kāmila* (green jaundice) and associated cardiac conditions. Within the framework of traditional Indian medical thought, it underscores the curative potential of the rays of the setting sun, which are believed to counteract the pathological greenish discoloration characteristic of jaundice. In addition, the *mantra* articulates the restoration of the natural human complexion, representing the infusion of healthy coloration into the patient's body, derived from the red-coloured cow.

परि त्वा रोहितैर्वर्णैर्दीर्घायुत्वाय दध्मसि ।
यथायमरपा असदथो अहरितो भुवत् ॥ (1.22.2)
pari tvā rohitairvarṇairdīghāyutvāya dadhmasi .
yathāyamarapā asadatho aharito bhuvat ..

The subsequent *mantra* emphasizes the rejuvenation and longevity of the patient through the therapeutic intervention described earlier. It reaffirms the infusion of healthy coloration into the patient's body, derived from the red-coloured cow, as introduced in the preceding *mantra*. Moreover, this *mantra* underscores the significance of the treatment in ensuring recovery and sustaining vitality after illness. A patient thus treated is liberated from disease and consequently freed from the greenish discoloration of the body caused by green jaundice. Restored to health, the patient is not only cured but also endowed with the prospect of long life.

या रोहिणीर्देवत्या गावो या उत रोहिणीः।
रूपं रूपं वयोवयस्ताभिष्ट्वा परि दध्मसि ॥ (1.22.3)
yā rohiṇīrdevatyā gāvo yā uta rohiṇīḥ.
rūpaṃ rūpaṃ vayovayastābhiṣṭvā pari dadhmasi ..

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The word *Devatyāḥ* also denotes the Sun in one of its meanings. Similarly, the Sanskrit word *go* or *gau* carries several interpretations. In this context, the word signifies both cow and sunrays.

The *Sāyaṇa Bhāṣya* states that the green discoloration of the patient should be cured and the normal skin tone be restored after the disease by both kinds of *go*—that is, by cows and by sunrays. The *Sāyaṇa Bhāṣya* further mentions the second meaning as *manuṣya-sambandhibhiḥ gobhiḥ*. The term *manuṣya-sambandhibhiḥ* translates as "by human-related." Analyzing the context here, another meaning of *go* can be inferred as sunrays. The *mantra* thus declares that the red-coloured cows and the red rays of the sun cure the patient suffering from green jaundice by rejuvenating the skin and restoring its natural tone. The texture of the skin, damaged due to the disease, is thereby healed and youthful skin is regained.

शुकेषु ते हरिमाणं रोपणकासु दध्मसि ।
अथो हारिद्रवेषु ते हरिमाणं नि दध्मसि ॥ (1.22.4)
śukeṣu te harimāṇaṃ ropaṇakāsu dadhmasi .
atho hāridraveṣu te harimāṇaṃ ni dadhmasi ..

In the preceding *mantras*, the infusion of healthy colouration from the cows is intended. Addressing the question of the diffusion of green pigmentation in the human body caused by green jaundice, this *mantra* declares that the green colour will be transferred from the patient's body into the birds such as parrots.

MODERN SCIENTIFIC RESEARCH: PARALLELS WITH THE ATHARVAVEDIC *SŪKTA* 1.22

The *Ḥṛdroga-kāmila-nāśana Sūktam* of the Atharvaveda provides a striking example of how ancient therapeutic thought can be examined alongside modern biomedical science. The text describes both the manifestation of disease and its treatment through natural agents such as sunlight and bovine elements. When analyzed in the light of contemporary research, several meaningful parallels emerge.

Clinical Features of Harimā and Biomedical Parallels to Hyperbiliverdinemia

The *Ḥṛdroga-kāmila-nāśana Sūktam* of the Atharvaveda demonstrates an early recognition of disease complexity. The text associates *harimā* (green jaundice) with both cutaneous discoloration and cardiac distress.

The condition referred to in the *sūkta* corresponds to what modern medicine identifies as hyperbiliverdinemia, commonly termed "green jaundice." This disorder arises when biliverdin, a green bile pigment, accumulates in the body due to impaired conversion into bilirubin (Takemoto, J.Y. et al., 2019).

The Atharvavedic verses appear to recognize two interconnected ailments: the green discoloration of the skin and the potential involvement of cardiac distress.

Current medical literature also notes that right-sided heart failure can precipitate jaundice, including rare cases of green jaundice (Kumar, A., et al.,2016). Although biliverdin itself does not directly damage cardiac tissue, its persistence in circulation may signal severe systemic dysfunction, indirectly contributing to cardiovascular complications. Thus, the Vedic text's association of jaundice with heart disease finds resonance in modern clinical observations.

Therapeutic Applications of the Sunrays for Jaundice and Cardiac Health

The first *mantra* (Atharvaveda 1.22.1) provides the therapeutic framework for treating the *Harimā* (jaundice) through the rays of the setting sun.

From a biomedical perspective, biliverdin is normally reduced to bilirubin by the enzyme biliverdin reductase. However, when this conversion or oxidative changes in bilirubin is impaired due to liver disease, bile duct obstruction, or genetic defects biliverdin accumulates, resulting in hyperbiliverdinemia or green-jaundice (McDonagh A, 2010).

Modern therapeutic practice has demonstrated that exposure to specific wavelengths of sunlight, especially the blue-green spectrum, is effective in treating neonatal jaundice by promoting photochemical breakdown of bilirubin (Horn, D., et al., 2021; Bhutani, 2016). While modern neonatal phototherapy primarily employs blue wavelengths, the Atharvavedic reference to red rays may reflect symbolic therapeutic colour associations rather than exact wavelength correspondence.

It should be noted that the Atharvavedic *mantra* invokes the therapeutic role of sunlight in a general sense and does not specify particular wavelengths. The comparison with modern phototherapy is therefore interpretative and intended to highlight conceptual similarity rather than direct equivalence. Furthermore, clinical studies have shown that controlled sunlight exposure can improve cardiovascular health, thereby supporting the *sūkta's* dual emphasis on cardiac and jaundice recovery (Scragg et. al., 2019).

The Red-rays of the Sun for Rejuvenation of Skin

The third *mantra* (Atharvaveda 1.22.3) provides the therapeutic modality of red rays of the sun for the rejuvenation of skin.

Studies have shown that solar infrared radiation increases the production of collagen and elastin in human fibroblasts. This increase is proportional to the duration of exposure and helps in improving skin texture and reducing wrinkles (Shin, 2020).

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The specific reference to red rays in this *mantra* appears in the context of rejuvenation and restoration of skin tone, which conceptually aligns more closely with contemporary red and infrared light-based dermatological therapies than with phototherapy used for jaundice.

Bovine Dermal Scaffolds

Another dimension of the *sūkta* is its reference to the infusion of healthy complexion from the cow.

In modern medical science, bovine derivatives play a significant role in reconstructive therapies. Surgeons employ bovine dermal scaffolds in cases of chronic wounds, burns, or severe skin loss. Collagen extracted from cow hide is purified and used as a biomaterial for skin textures, to fill wrinkles, repair scars, and restore damaged tissue (UCSF Health. (n.d.)).

This practice is similar to the Vedic imagery of transferring healthy complexion from cows to patients, suggesting a conceptual resemblance to biomedical applications involving bovine tissue.

Infusion of Biliverdin from Human to Birds

The Atharvavedic *Ḥṛdroga-kāmila-nāśana Sūktam* (1.22) describes the transfer of green pigmentation from the patient to birds such as parrots. This articulation reflects an early observation of how biliverdin, a green bile pigment, behaves differently across species. In humans, biliverdin accumulation occurs when the enzyme biliverdin reductase fails to convert it into bilirubin. This leads to the clinical condition known as “green jaundice,” a severe manifestation of hepatic dysfunction (Takemoto, C., et al. 2019). Such cases are rare but clinically significant, often associated with systemic complications including right-sided heart failure (Kumar, A., et al.,2016).

In avian physiology, biliverdin is not pathological but instead serves as a natural pigment. It contributes to the blue-green coloration of eggshells and feathers, and plays roles in sexual selection and antioxidant defense (Muruz et. al., 2023).

Comparative studies indicate that birds can tolerate and utilize biliverdin as part of their normal biochemical processes. For example, research has shown that biliverdin is incorporated into avian tissues without toxicity, in contrast to mammals where its persistence signals liver distress (Kennedy et.al., 1976).

The textual description of transferring pigmentation from humans to birds can be understood as an early recognition of species-specific differences in pigment metabolism. What is harmful in humans is physiologically integrated in birds. This observation aligns with modern comparative biology, which highlights how biliverdin functions as a pathological marker in mammals but as a beneficial pigment in avian systems. The Atharvavedic account therefore

presents a conceptual framework of healing that acknowledges the redistribution of pathological elements into domains where they are naturally accommodated.

DISCUSSION

Sunlight and Vitality

The Atharvavedic verses present sunlight as a restorative force, counteracting discoloration and renewing vitality. The concept of treating *Harimā*/*Kāmila* and skin texture through the sunrays, emphasizes the Vedic perspective of health and rejuvenation.

In relation to modern perspectives, sunlight is recognized for its influence on pigmentation, circadian rhythms, and overall vitality. The invocation of solar rays in the *sūkta* resonates with these observations, suggesting that the ancient text perceived sunlight as integral to restoring harmony in the body. The emphasis on red rays, in particular, highlights a connection between colour, vitality, and renewal, which modern science interprets through its effects on skin and tissue health.

Bovine Symbolism and Complexion

The red cow is invoked as a source of healthy complexion and vitality. This symbolism reflects the infusion of strength and natural coloration into the patient, situating the cow as a mediator of health and renewal.

In contemporary contexts, bovine derivatives are employed in restorative practices, particularly in reconstructive therapies. While the Atharvavedic text does not describe such applications, its symbolic association of bovine qualities with rejuvenation finds resonance in the modern use of animal-derived materials for healing and restoration. The imagery thus bridges symbolic vitality with material parallels in present-day practices.

Avian Transference of Pigmentation

The *sūkta* describes the transfer of green pigmentation from the human body to birds such as parrots. This motif reflects the recognition of avian physiology, where green coloration is natural and non-pathological. The act of transference symbolizes the removal of disease burden from humans and its relocation into a domain where it is harmonized with nature.

Modern studies confirm that birds utilize pigments such as biliverdin in their coloration, highlighting a natural contrast with human pathology. The Atharvavedic concept of transferring pigmentation thus offers an intriguing symbolic parallel with contemporary observations of avian biology. While not describing a literal biomedical mechanism, the Atharvavedic model may provide a conceptual basis for future interdisciplinary research into biomedical transfer phenomena, particularly in areas involving molecular transport, adaptive metabolism, and translational bio-inspired science. This perspective suggests that the text

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framed healing not only as restoration, but also as the redistribution of imbalance into a natural order.

Holistic Framework of Healing

The Atharvavedic approach situates illness and recovery within a continuum of natural and cosmic forces. Disease is portrayed as a disturbance of harmony, while healing is envisioned as restoration through sunlight, bovine vitality, and avian transference. The text emphasizes that recovery is not limited to physical correction but involves reintegration into the broader ecological and cosmological order.

Modern perspectives, though articulated in different epistemological terms, similarly recognize the systemic nature of health, where multiple factors like environmental, biological, and social interact to shape well-being. The Atharvavedic *sūkta* thus demonstrates how ancient texts framed illness and recovery in holistic terms, offering a vision that continues to invite comparative reflection.

CONCLUSION

The *Ḥṛdroga-kāmila-nāśana-sūktam* of the Atharvaveda (1.22) embodies more than ritual symbolism, potentially encoding observations that may be interpreted alongside biomedical phenomena.

It presents a sophisticated therapeutic conception of green jaundice that integrates solar intervention and the restorative potential of bovine tissue. When examined alongside contemporary biomedical findings on biliverdin toxicity in humans and its beneficial metabolism in birds, the *sūkta* reveals a striking conceptual similarity between ancient Vedic thought and modern biochemical science across millennia.

This study underscores the relevance of Atharvavedic medical insights as valuable conceptual frameworks for integrative and interdisciplinary research in traditional and modern medicine.

This discussion highlights the value of re-examining traditional texts not merely as cultural artifacts but as repositories of proto-scientific insight. By situating Vedic healing practices within the framework of modern biomedical science, scholars can uncover historical continuities in medical knowledge and identify potential avenues for integrative research. Such interdisciplinary exploration enriches both the history of medicine and contemporary approaches to holistic health.

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Brief Profile of the Author:

Dr. N. Sridhar is a distinguished scholar specializing in Sanskrit, Indian philosophy, Vedic Wellness Practices, IKS and interdisciplinary studies. Currently serving as an Associate Professor and Vice Principal, School of Yogic Sciences at S-VYASA Deemed to be University, Bengaluru, he actively contributes to academic administration, curriculum development, and research integration. His doctoral research, titled Vaiśeṣikadarśanasya Katipayasiddhāntānām Vaijñānikarītyā Vimarśaḥ, explores select principles of Vaiśeṣika philosophy through a scientific lens, bridging classical metaphysical thought with contemporary perspectives. This innovative approach underscores his commitment to integrating traditional Sanskrit wisdom with modern scientific discourse.

Beyond academics, he actively engages in Sanskrit promotion and outreach as a dedicated volunteer at Samskrita Bharati, where he contributes to initiatives aimed at preserving and popularizing the Sanskrit language. Dr. Sridhar has authored and co-authored numerous books, research papers, and articles, focusing on the intersection of ancient wisdom and contemporary applications. He has played a key role in launching academic programs and organizing seminars that bridge traditional Sanskrit studies with scientific principles.

Additionally, he has contributed to Sanskrit pedagogy through textbooks, translations, and workshops, promoting accessibility and engagement in classical learning. His interdisciplinary approach enriches academic discourse and helps preserve India's philosophical and linguistic heritage while advancing skill-oriented educational practices.

Statements and Declaration: I, Dr. N. Sridhar, hereby declare that this manuscript is my original work and does not infringe on any rights of third parties. All sources have been duly acknowledged and cited. Co-pilot and ChatGPT were used for grammatical check and syntax formation of sentences. This work has not been previously published in whole or in part. I declare that I have no conflict of interest with my place of employment or anybody else in publishing this article. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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