



Stress Hormones And Dosha Prakopa: An Ayurvedic – Neuroendocrine Hypothetical Framework

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Abstract

Psychological and physiological stress is a well-established contributor to the onset and progression of multiple chronic disorders, mediated primarily through neuroendocrine pathways involving stress hormones such as cortisol, adrenaline, and noradrenaline. Despite extensive biomedical research, individual variability in stress response and disease susceptibility remains inadequately explained. Ayurveda, through its holistic understanding of mind–body interaction, offers a constitution-based framework that may elucidate this variability.

This paper proposes a hypothetical framework correlating stress hormone dysregulation with *Dosha Prakopa*, emphasizing the role of *Manasika Nidana*, *Agni*, *Ojas*, and *Srotas*. Classical Ayurvedic concepts such as *Chinta*, *Bhaya*, *Krodha*, *Shoka*, and *Vishada* are examined alongside modern stress physiology, particularly hypothalamic–pituitary–adrenal (HPA) axis activation. A Dosha-specific interpretation of stress hormone effects is proposed, suggesting that chronic stress leads to predictable Dosha imbalance patterns depending on individual *Prakriti*.

By integrating Ayurvedic psychopathology with contemporary neuroendocrinology, this conceptual model provides a novel explanation for stress-related disorders and inter-individual variability in stress resilience. The framework highlights potential clinical and research implications, including personalized stress management, preventive strategies, and integrative therapeutic approaches. The hypothesis warrants further validation through observational, clinical, and experimental studies.

Keywords: Stress Hormones; Dosha Prakopa; Cortisol; HPA Axis; Manas Roga; Prakriti; Ayurveda; Psychoneuroendocrinology

Introduction

Stress is an unavoidable component of modern life and is increasingly recognized as a central etiological factor in a wide range of diseases, including metabolic syndrome, cardiovascular disorders, autoimmune diseases, psychiatric illnesses, and functional somatic syndromes. The biological stress response is primarily mediated by activation of the sympathetic nervous system and the hypothalamic–pituitary–adrenal (HPA) axis, resulting in the release of stress hormones such as cortisol, adrenaline, and noradrenaline.

Although stress exposure is ubiquitous, not all individuals develop stress-related disorders, indicating significant inter-individual variability in stress perception, neuroendocrine response, and physiological adaptation. Contemporary medicine attributes this variability to genetic predisposition, early-life programming, and psychosocial factors; however, these explanations often fail to provide an integrated clinical framework.

Ayurveda offers a sophisticated understanding of stress through the concepts of *Manasika Nidana* (psychological etiological factors), *Dosha Prakopa*, and *Sharira–Manas Sambandha* (mind–body

interrelationship). Classical texts recognize emotions such as *Chinta* (anxiety), *Bhaya* (fear), *Krodha* (anger), *Shoka* (grief), and *Vishada* (depression) as potent causative factors in disease manifestation. This paper aims to develop a hypothetical framework linking stress hormone dysregulation with Dosha imbalance, integrating classical Ayurvedic theory with modern neuroendocrine science. The proposed model seeks to explain individual susceptibility to stress-related disorders and offers a personalized, constitution-based perspective relevant to both Ayurveda and integrative medicine.

Stress Hormones: A Modern Overview

The stress response is mediated primarily through two interconnected systems:

1. **Sympatho-Adreno-Medullary (SAM) Axis**
Acute stress activates the sympathetic nervous system, leading to the release of adrenaline and noradrenaline, resulting in increased heart rate, blood pressure, and alertness.
2. **Hypothalamic–Pituitary–Adrenal (HPA) Axis**
Chronic stress stimulates the release of corticotropin-releasing hormone (CRH), adrenocorticotropic hormone (ACTH), and ultimately cortisol. While adaptive in the short term, prolonged cortisol elevation leads to metabolic dysregulation, immune suppression, neuroplastic changes, and increased disease risk. Dysregulation of these systems has been implicated in anxiety disorders, depression, obesity, diabetes, hypertension, autoimmune diseases, and chronic fatigue syndrome.

Ayurvedic Concept of Stress and Manasika Nidana

Ayurveda conceptualizes stress as a disturbance of mental equilibrium resulting from *Rajas* and *Tamas* predominance. Classical texts emphasize that mental factors can directly vitiate Doshas and impair Agni. Charaka states:

“मानसाः खलु दोषाः शरीरस्यापि दोषान् प्रकुप्यन्ति” - (*Charaka Samhita, Sharira Sthana*)

Mental disturbances are capable of provoking bodily Doshas.

Key Manasika Nidana associated with stress include:

- *Chinta* – excessive thinking/anxiety
- *Bhaya* – fear
- *Krodha* – anger
- *Shoka* – grief
- *Vishada* – despair

These factors disturb *Manovaha Srotas*, impair *Agni*, and initiate systemic Dosha Prakopa.

Dosha-Specific Interpretation of Stress Hormones

Vata Dosha and Stress Hormones

Vata governs movement, nervous system activity, and regulation. Stress-induced catecholamine release parallels Vata aggravation.

Clinical correlation:

- Anxiety
- Insomnia
- Palpitations
- Irritable bowel symptoms

Chronic stress leads to *Vata Prakopa* through nervous system hyperactivity and catabolic dominance.

Pitta Dosha and Stress Hormones

Pitta governs metabolism, transformation, and enzymatic activity. Elevated cortisol and sympathetic activation enhance metabolic heat and inflammatory responses.

Clinical correlation:

- Irritability and anger
- Acid peptic disorders
- Hypertension
- Inflammatory conditions

Sustained stress results in *Pitta Prakopa* through hypermetabolic and inflammatory pathways.

Kapha Dosha and Stress Hormones

Kapha governs structure, stability, and immunity. Chronic cortisol exposure promotes anabolic storage, insulin resistance, and immune suppression.

Clinical correlation:

- Weight gain
- Depression
- Lethargy
- Metabolic syndrome

Prolonged stress eventually leads to *Kapha Dushti* and *Ojakshaya*.

Proposed Stress Hormone–Dosha Prakopa Framework

Table 1: Stress Hormones and Dosha Correlation

Stress Response	Dominant Hormone	Dosha Affected	Clinical Manifestation
Acute stress	Adrenaline	Vata	Anxiety, restlessness
Subacute stress	Cortisol	Pitta	Irritability, inflammation
Chronic stress	Cortisol dysregulation	Kapha	Obesity, depression

Role of Prakriti in Stress Susceptibility

Prakriti determines baseline Dosha dominance and stress adaptability:

- Vata Prakriti: heightened sensitivity to stress
- Pitta Prakriti: intense reactivity
- Kapha Prakriti: delayed but sustained stress effects

This explains why similar stress exposure produces different disease outcomes across individuals.

Clinical and Research Implications

- Prakriti-based stress assessment may predict disease risk.
- Personalized stress management strategies can be developed.
- Integrative protocols combining Ayurveda, yoga, and modern psychology may improve outcomes.
- Research stratified by Prakriti may yield clearer stress–disease correlations.

Future Research Directions

1. Correlation studies between cortisol levels and Dosha dominance.
2. Longitudinal studies on stress exposure and Dosha Prakopa.
3. Neuroendocrine profiling across Prakriti types.
4. Clinical trials evaluating Prakriti-based stress interventions.

Conclusion

The proposed Ayurvedic–neuroendocrine framework offers a novel explanation for stress-related Dosha imbalance and disease susceptibility. By integrating classical Ayurvedic principles with modern stress physiology, this hypothesis advances a personalized and predictive model of stress-related pathology. Validation of this framework may significantly enhance preventive and therapeutic strategies in both Ayurveda and integrative medicine.

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