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ENDOCRINOLOGY AND AYURVEDA: A REVIEW ARTICLE

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ABSTRACT

Endocrinology deals with hormones that regulate metabolism, growth, reproduction, and homeostasis. Ayurveda[2], with its tridosha theory, dhatu-mala concept, and panchamahabhuta framework, provides a functional and holistic interpretation of hormonal activity. This article explores parallels between modern endocrinology and Ayurveda, focusing on hormone physiology, chemical nature, mechanism of action, and feedback regulation, along with Ayurvedic perspectives of dosha, dhatu, agni, and srotas.

KEYWORDS: Dosha, Dhatu, Agni, Srotas, Endocrinology.

INTRODUCTION

Endocrinology in contemporary medicine is described under 'Digestion and Metabolism', indicating the wide-ranging role of hormones from digestion to cellular regulation. Psycho-neuro-immuno-endocrinology emphasizes the interconnectedness of regulating systems maintaining homeostasis. Ayurveda2 also proposes a similar integrative framework, wherein doshas, dhatus, and malas interact dynamically. For instance, vata vriddhi can lead to kapha kshaya3, reflecting inter-system regulation. Hormones, like doshas, function as chemical messengers (dravya guna karma) with panchabhautika predominance.[4]

Ayurvedic Conceptual Parallels

1. Panchamahabhuta and Hormones

The chemical nature of hormones corresponds to their panchamahabhuta composition. Proteins, lipids, and nucleic acids exhibit dominance of different elements (CHON), comparable to agni bhuta, ap bhuta, or prithvi bhuta predominance.

Example

- Proteins (amino acids with nitrogen) → Agni bhuta dominance.
- Lipids (snigdha, guru) → Prithvi & Ap bhuta dominance.
- T3 & T4 → high iodine (guru, snigdha) suggests pitta/kapha association.[5]

2. Bhutagni and Hormonal Metabolism

The principle of bhutagni explains intermediary metabolism. Just as each bhutagni metabolizes its corresponding mahabhuta, hormones regulate intermediary cellular transformations.[6]

Endocrine Glands in Ayurveda

Unlike strictly anatomical definitions, endocrine glands resemble ashayas (local functional units). Their irregularity and subtlety correspond to vata karma (irregular, mobile, initiating functions).

Example

- Thyroid gland → Kaphashaya (due to jatrurdhva sthana, a kapha region), but functionally influenced by prana vata.
- Pituitary (master gland) → central regulator, resembling vata karma in initiating actions.[8]

Hormones and Enzymes

While Ayurveda often equates hormones with dhatvagni, this correlates more precisely to enzymes:

- Enzymes act locally and are reusable.
- Hormones act distantly, are degraded, and initiate reactions. Thus, enzymes = dhatvagni; hormones = dosha-dhatu regulators.[9]

Hormonal Production and Transport

- Stimuli: Neural and psychological, corresponding to vata and manas influences.

- Transport: Through srotas—both sthula (gross) and sukshma (microscopic). Hormone entry into cells parallels srotomukha entry/exit mechanisms.

From an Ayurvedic lens, the division of endocrine/exocrine is less relevant—both represent specialized srotas.[10]

Feedback Mechanisms

Feedback control in endocrinology (positive and negative) parallels dosha-dhatu samyavastha. The axis system (e.g., hypothalamic–pituitary–thyroid axis) is functional, not structural, just like dosha gati pathways.[11]

- Stimulation/inhibition = vata karma.
- Excess hormone = vriddhi of dosha/dhatu.
- Deficiency = kshaya.
- Resistance = ama dosha blocking receptor-level action.[12]

Mechanism of Hormone Action

Receptor Binding

Specificity of hormone-receptor interaction corresponds to:

- Dhatu specificity (tissue dominance).
- Bhutagni specificity (functional dominance).

Explained by samanya vishesha siddhanta (principle of similarity/dissimilarity).[13]

Intracellular Signalling

Hormone-receptor complexes → parinamana (transformation) and paravritti (mutation).

Gene-Level Actions

Some hormones (T4, aldosterone) act at the genetic level, comparable to dosha influences on deha-sambhava hetu (constitutional factors).

Pathological Interpretations in Ayurveda

- Excess production: Dosha/dhatu vriddhi or vata karma vriddhi.
- Deficient production: Dosha/dhatu kshaya or vata karma kshaya.
- Resistance: Ama dosha obstructing pathways.

Example: Hypothyroidism may present as TSH vriddhi (vata karma vriddhi) with thyroid

pitta-kapha dhatu dysfunction.[14]

CONCLUSION

Hormones, though described as chemical messengers in modern science, align closely with dosha-dhatu-mala interactions, bhutagni, srotas, and ashaya concepts in Ayurveda. A functional, not structural, approach allows Ayurveda to explain endocrine physiology and pathology with holistic depth.

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