

ENDOCRINE SYSTEM AND AYURVEDA PERSPECTIVES OF HORMONAL REGULATIONS: A REVIEW

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ABSTRACT

Tridosha namely *Vata*, *Pitta* and *Kapha* maintains health by controlling physiological process of various system of body. Endocrine is one of the systems of body which govern many physiological processes and related with glands and their secretions. Endocrine glands are normally secrete hormones which perform many biological processes. The functioning of *Tridosha* can also be correlated with hormonal system in different aspects. Endocrine glands secrete hormones directly into blood without duct. The major glands of this system are pituitary gland, pineal gland, ovaries, testes, pancreas, hypothalamus, adrenal glands, thyroid gland and parathyroid gland, etc. Some of them are considered as neuro-endocrine organs related with the neural function. This article explored endocrine system and Ayurveda perspectives of hormonal regulations.

KEYWORDS: *Ayurveda*, *Hormone*, *Endocrine*, *Glands*, *Dosha*.

INTRODUCTION

Ayurveda as ancient discipline of medical science provides framework that gives scientific idea about diseases and their treatment. Ayurveda integrating with modern science is exploring huge opportunity to solve many unresolved issues of medical science. As medical science deals with many branches or system separately to provides focused opinion on specific health issue. Endocrinology is one such branch or system of medical science which deals around secretion and functioning of hormones. Endocrine glands are secrete hormones of biological importance and helps in several physiological activities of body.^[1,3]

The functions and role of these ductless glands can be correlated with the activities of *Doshas* according to the Ayurveda science. The secretions of endocrine glands are responsible for physiological, biochemical and pathological events inside the body. The normal secretary activities of these gland gives balanced physiology of body while abnormal secretions are responsible for diseases. Similarly balancing state of *Dosha* is responsible for normal state of bodily activities while imbalanced state of *Dosha* causes abnormal functioning of organs.

Importance of Endocrine System and Ayurveda

Classical Ayurvedic texts do not describe the endocrine system in the same terms as modern medicine; they do recognize the importance of hormones and their effects on the body. Ayurveda identifies three primary *Doshas* which govern all physiological and psychological processes. Hormones are seen as a manifestation of the interplay between these *Doshas*. The subtle energies of *Ojas*, *Tejas* and *Prana* are believed to be influenced by hormonal balance. Healthy endocrine function is crucial for maintaining these energies, which in turn support well-being and immunity, etc.

Agni as digestive fire linked to digestion, metabolism, and transformation processes in the body. Functioning of *Agni* is necessary for the balanced production and regulation of hormones. Disturbances in *Agni* can lead to hormonal imbalances and related disorders. Similarly functions of reproductive system are closely tied to the endocrine system.^[3,6]

Ayurveda recognizes the deep connection between the *Manas* and *Sharira*; hormones play a significant role in this connection, affecting emotions, cognition, and overall mental health. In this regard Ayurveda suggested meditation and *Yoga* to regulate the endocrine system. Ayurveda also suggested different approaches to manage

endocrine disorders like lifestyle changes, *Panchakarma*, *Rasayana* and herbal remedies, etc.

The *Chakra* system is one of the part of Ayurvedic and *Yogic* traditions, that can be aligns with various endocrine glands. For instance, *Ajna* is associated with the pituitary gland, and the *Vishuddha* can be correlated with thyroid gland.^[5,7]

Apparent Ayurveda Correlation with Endocrine Function

Physiological concepts of the endocrine glands have no direct references in Ayurvedic literatures. However *Tridosha* activities can be correlated with this system up to some extent. For example physiology of thyrotrophic hormone can be correlated with *Kapha Dosha* since both are responsible for growth and activity of thyroid.

Vata Dosha govern activities of other *Dosha*, similarly thyroid gland govern activities of other glands since it influence thyroid stimulating hormone. So *Vata* function can be correlated with activity of thyroid gland.

Thyrotrophic hormone secretes proteolytic enzyme which converts thyroglobulin into thyroxin, similarly metabolic transformation is related with the function of *Pitta* and this activity can be correlated with *Pachana* effect of *Agni*. *Agni* helps in biotransformation process as like secretary enzyme and this function facilitate by *Pitta*.

Thyrotrophic hormone can be co-related with *Vata Vayuhu Tantrayantradhara* since it controls normal functioning. Function of *Kapha* and *Vata Dosha* similar to Adrenocorticotrophic hormone which regulates growth and adrenal cortex.

Gonadotrophic hormones are three types as depicted in **Figure 1**. Amongst three types luteotrophic hormone is required for lactation; this function is related with *Vata Sarvadhatuvyuhakara* since *Stanya* is considered *Upadhatu* of *Rasadhatu*. This activity can also be correlated with the formation and nourishment of *Dhatu* and subsequent *Upadhatu*.^[6,8]

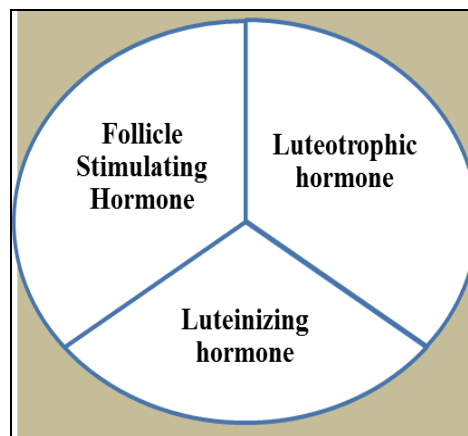


Figure 1: Types of Gonadotrophic hormones.

Luteinizing hormone is related with the maintenance of corpus luteum, being *Tantrayantradhara* of body *Vata* indirectly controls functions of corpus luteum. Thus this hormone can be correlated with *Vata* activities.

Oxytocin hormone is involved in uterine contraction to expel out foetus during pregnancy and this function can be compared with *Apana Vata* activities which facilitate foetus expulsion. Similarly hormone which regulates function of pressure can be resemble to function of *Vyana Vata*. Functions of thyroxin hormone can be co-related with *Pitta* function mainly activities of *Dhatupaka* and *Bhutagnipaka* specifically. It can be stated that the hormones secreted by thyroid gland possesses similar nature as like *Pitta Dosha*.

Parathyroid gland mainly responsible for calcium phosphate in blood, this regulation is related with *Vata Dosha* since function of *Vata* is *Tantrayantradhara* and also affects regulation of metabolic process associated with mineral assimilation and absorption.

Hormone involve in carbohydrate metabolism performs their functions as like *Vayutantrayantradhara* action of *Vata*. Insulin and adrenal cortex hormone govern carbohydrate metabolism normally and their appropriate level regulates balanced metabolism of carbohydrates, this activity can be correlated with function of *Vata & Pitta*. Langarhane of pancreas which secretes insulin can be considered *Pitta* predominant organ, therefore insulin also resembles *Pitta* predominance.

The role of epinephrine hormone is related with *Agni* of *Rakta*, can be considered as like function of *Raktadhatvagni*. Stimulation of body by hormone can be related with *Pitta* and *Vata* which facilitates movement of limbs during emergency condition.

The origin of sex hormone or sexual functions can be correlated with *Shukradhatuttpatti* and *Shonitottpatti* in male and female respectively. *Vata* as *Sarvadhatuvyuhakara* facilitate these functions. Mainly *Vata* and *Kapha* involves in the formation and flow of

fluids associated with reproductive activities. The breast development as *Upachaya* activity mainly related with function of *Kapha*, similarly *Rakta* involve in menstruation along with *Vata* for flow of menstrual fluid. Function of ovary related hormones can be co-related with *Vata* and *Apanavata* which regulate menstrual flow and *Apanavata* particularly regulates menstruation and facilitate expulsion of foetus.

Shukradhatu formation merely depends upon activity of *Pitta* and *Kapha* while *Shukravahasrota* function depends upon the activity of *Vata*. *Shukradhatvagni* and *Vata* along with *Pitta* can be co-related with activities of testicular hormone.^[7,9]

CONCLUSION

The endocrine system is a network of glands and organs that produce, store, and secrete hormones. These hormones are chemical messengers that regulate various physiological processes in the body, including growth, metabolism, and reproduction. The endocrine system works in concert with the nervous system to maintain homeostasis. Hypothalamus is linked to the nervous system *via* the pituitary gland, which regulates other endocrine glands. Thyroid gland regulates metabolism and growth. Parathyroid glands regulate calcium levels in the blood. Adrenal glands related to stress response and immune function. Pineal gland regulates sleep patterns, pancreas regulates blood glucose levels and gonads produce sex hormones that influence sexual development and reproduction.

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