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A Conceptual Framework of Tridosha in Thyroid Gland Regulation and its management Shakya A.¹, Pradhan R.², Bharadwaj U.³

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Abstract:

INTRODUCTION: Ayurveda is an ancient Indian holistic medicine system, deeply rooted in the concept of balancing the mind, body and spirit to promote health and wellness. One of the core principles of Ayurveda is the theory of Tridosha, which refers to the three fundamental bio-energies that govern the functioning of the human body. These three dosha—Vata, Pitta and Kapha are considered essential to maintaining physiological and psychological harmony. A key idea of Ayurveda, the tridosha theory, asserts that the three doshas—Pitta, Kapha, and Vata—should be in equilibrium. The thyroid gland, a key component of the endocrine system, regulates metabolism, growth, and development. Imbalances in these dosha are thought to correspond with thyroid disorders. Thyroid control can be achieved naturally and individually with a holistic approach that incorporates Ayurvedic management and yoga. This study emphasizes how crucial it is to maintain a healthy Tridosha balance in order to control thyroid activity and general wellness. In this study, an attempt has been made to highlight the potential relationship between the thyroid conditions and Tridosha. **AIM:** explore the conceptual connections between tridosha and thyroid functioning. **METHODOLOGY:** For study collection of references from sources like Ayurvedic classics, Books of modern medicine, journals, research papers, etc. **RESULT & CONCLUSION:** Ayurvedic principles suggest that balancing the tridosha can help manage thyroid functioning. Ayurveda and yoga management for general well-being, as well as the function of Tridosha in thyroid gland activity and its influence on thyroid diseases.

Keywords: Tridosha, thyroid gland.

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INTRODUCTION:

In recent times, individuals have experienced significant shifts in their dietary habits and lifestyles, largely due to modernization and the impact of Western culture. Poor eating practices, combined with a lack of physical activity, lead to numerous health issues, including metabolic disorders.

The Tridosha, comprising the three body humors—Vata, Pitta, and Kapha—are the fundamental concepts of the Ayurvedic system of medicine. The Tridosha play a crucial role in sustaining health by regulating all body physiological processes and can lead to diseases if their balanced state is disrupted. Tridosha, are essential for maintaining general health throughout life in accordance with natural law. On the one hand, a pathological state is represented by an imbalance in the dosh equilibrium, while a physiological one is represented by a normal Tridosha. The thyroid gland is referred to as avatugranthi in Sanskrit. Ayurvedic literature discusses goiter caused by either hyperthyroidism or hypothyroidism as Galaganda, which is marked by swelling in the neck. The earliest mention of the thyroid in the Atharvaveda is under the name apachi. Acharya Charak has described Galaganda as a single swelling. Acharya Sushruta has identified Rohini, which is the sixth layer of Twacha, as the location of Galaganda. Thyroid conditions are increasing globally. A significant health issue impacting people worldwide is thyroid disorder. The American Thyroid Association (ATA) predicts that over 12 percent of the U.S. population will experience some form of thyroid disorder during their lifetime. The American Thyroid Association estimates that 20 million Americans suffer from a thyroid condition at this time. The likelihood of thyroid diseases developing in women is five to eight times higher than in men. According to Unnikrishnan A.G., Menon U.V. Thyroid

disorders in India: An epidemiological perspective. Indian J Endocrinol Metab. 2011 Jul;15(Suppl 2): S78-81

A report from India released in 2011 indicated that there were 42 million individuals affected by various types of thyroids disorders. In this review, an attempt has been made to highlight the potential relationship between the thyroid conditions and Tridosha.

AIM:

This study work is conducted to comprehend the Tridosha Framework in the regulation of the Thyroid Gland according to Ayurvedic principles and the corresponding management protocol in Ayurveda.

MATERIAL AND METHODS:

This research primarily involves a literary review of Ayurvedic texts, including Bruhtrayi and Laghutrayi, along with their commentaries. Additionally, the contemporary aspects of applied physiology, specifically hyperthyroidism and hypothyroidism, are examined using modern literature and through searches of various medical research databases such as Google Scholar, research articles from different Ayurvedic journals, and national research databases. The study is fundamentally based on conceptual analysis.

DISCUSSION:**INSIGHTS INTO THYROID GLAND:**

The thyroid is an endocrine gland located on either side of the trachea at the base of the neck. It consists of two lobes joined by an isthmus in the center. In adults, it weighs between 20 and 40 g. Women's thyroids are larger than men's. The thyroid gland is made up of many closed follicles. The follicular cells are cuboidal epithelial cells that line these follicles. The follicular cells secrete a colloidal material called thyroglobulin, which fills the follicular cavity. Follicular cells also secrete tetraiodothyronine (T4 or

thyroxine) and tri-iodothyronine (T3). In between the follicles, the parafollicular cells are present these cells secrete calcitonin.

Thyroid gland secretes three hormones:

1. Tetraiodothyronine or T4 (thyroxine)
2. Tri-iodothyronine or T3
3. Calcitonin.

About 90% of the entire secretion is made up of T4, sometimes referred to as thyroxine, while only 9% to 10% is made up of T3. T4 and T3 are both derivatives of the amino acid tyrosine that include iodine. The thyroid gland is regarded as a vital component of the endocrine system, as it influences almost all bodily functions, encompassing metabolic, respiratory, cardiovascular, digestive, nervous, and reproductive systems, either directly or indirectly.

- Effects of Thyroid Hormone on Specific Bodily Mechanisms
- Stimulation of Carbohydrate Metabolism
- Stimulation of Fat Metabolism
- Effect on Plasma and Liver Fats
- Increased Requirement for Vitamins
- Increased Basal Metabolic Rate
- Decreased Body Weight
- Effect on Sleep

Thyroid disorders rank among the most prevalent conditions observed in contemporary society. Under normal circumstances, the thyroid gland's role is to regulate the metabolism of the body. This regulation is accomplished through the hormones secreted by the thyroid gland. When these hormones fail to keep the body's metabolic rate stable, the two most frequent conditions that arise are hypothyroidism and hyperthyroidism. There is no particular terminology for hypothyroidism or hyperthyroidism in the Ayurvedic classics. Nonetheless, numerous modern ailments are not referenced in Ayurvedic literature, referred to as 'Anukta' vyadhi.

ROLE OF IODINE:

For the production of thyroid hormones, including triiodothyronine (T3) and thyroxine (T4), which are vital for healthy growth and brain development, iodine is an essential micronutrient. Consequently, the negative health effects of insufficient iodine intake are likely linked to a reduced production of thyroid hormones throughout one's life. In particular, significant iodine deficiency during fetal development and early childhood, leading to hypothyroidism, is a well-recognized factor contributing to impaired neurodevelopment. Because iodine is essential for the production of thyroid hormones, insufficient amounts can result in hypothyroidism (reduced thyroid activity). Additionally, a lack of iodine is associated with the formation of goiter (swelling of the thyroid gland). Furthermore, high levels of iodine inhibit the thyroid's production of thyroid hormones. More than enough or too much iodine can be detrimental and lead to hypothyroidism and autoimmune thyroiditis (such Hashimoto's thyroiditis and chronic lymphocytic thyroiditis), according to research published in the journal Endocrinology and Metabolism in 2014. Severe lack of iodine leads to hypothyroidism, which impairs physical growth and motor skills in children. Mild to moderate iodine deficits can cause the thyroid to grow unnecessarily in multiple areas, leading to thyrotoxicosis. Conversely, having too much iodine is linked to the onset of hypothyroidism and autoimmune thyroid disorders. In regions where iodine is deficient, a rapid increase in iodine consumption can result in temporary hyperthyroidism.

AYURVEDIC PERSPECTIVE ON THYROID FUNCTION:

The physiological principles of endocrine glands are not explicitly mentioned in

Ayurvedic texts. Nonetheless, the functions of the Tridosha can be somewhat aligned with this system. For instance, the functioning of the thyrotrophic hormone can be related to Kapha Dosha, as both influence the growth and function of the thyroid. Vata Dosha regulates the functions of the other Doshas, just as the thyroid gland oversees the functions of other glands by influencing thyroid-stimulating hormone levels. Therefore, the functioning of Vata can be compared to the activity of the thyroid gland. The thyrotrophic hormone releases a proteolytic enzyme that transforms thyroglobulin into thyroxine; likewise, metabolic changes are associated with the role of Pitta, which can be linked to the *Pachana* effect. Thyrotrophic Hormone affects the development and function of the thyroid gland. Since growth (*Upachaya*) is associated with Kapha, the role of thyrotrophic hormone resembles that of Kapha Dosha. This hormone affects the thyroid's functions, and according to Ayurveda, all actions are only governed by Vata Dosha. Acharya Charaka has described Vata's role as *Pravartaka Cheshtana*, indicating that the activity of the thyroid gland influenced by T.S.H. (Thyroid Stimulating Hormone) aligns with the functions of Vata. Thyrotrophic hormone influences the function of thyroxine, and it can be associated with the role of *Vata Vayuhu Tantrayantradharah*. In this context, Tantra refers to 'all the normal functions,' while Yantra signifies 'the smallest component of the body.' Thus, *Tantrayantradharah* indicates that Vata oversees the normal functions of the body.

TRIDOSHA IN HYPOTHYROIDISM:

Typically, individuals with hypothyroidism display symptoms resembling an imbalance of Kapha, Vata, and an increase in Medo dhatu. An imbalance in Kapha is characterized by symptoms such as chills, tiredness, weight gain, reduced metabolic

rate, slower heart rate, and issues with joints. On the other hand, symptoms such as sensitivity to cold, sleep disturbances, feelings of sadness, low self-worth, joint discomfort, and constipation can be associated with the disturbance of Vata.

In Ayurveda, disorders associated with the thyroid are categorized under the condition referred to as "Galaganda" (enlarged thyroid gland). This condition can be correlated with simple goiter, which signifies a state of hypothyroidism. While other thyroid disorders are not thoroughly covered in Ayurveda, the issue of galaganda is extensively described in nearly all classical Ayurvedic literature.

Treatment Approach - Therefore, the focus of treatment should be on enhancing both jatharagni and Medodhatvagni while soothing Vata and Kapha. Thus, the medications must be pachan, dipana, and Medo-Kapha-Vatahara.

TRIDOSHA IN HYPERTHYROIDISM

Hyperthyroidism occurs when the thyroid gland generates thyroid hormones at normal or elevated levels. Notably, the levels of serum iodine rise or the uptake of iodine increases. A definitive blood analysis reveals elevated serum T4 and T3 levels along with decreased TSH levels. Most of the symptoms associated with hyperthyroidism result from heightened metabolic rates caused by the actions of thyroid hormones (particularly T3). It can certainly be concluded that the dosha associated with hyperthyroidism is Vata and Pitta. The signs such as *karsya* (thinness), *karsnya* (dark skin tone), *gatrakampa* (shaking), *spurana* (muscle twitches), and *pralapa* (speaking nonsensically) are observed in hyperthyroidism, which is associated with an increase in Vata dosha. *Glani* (fatigue), *indriyadaurbalya*, *daha* (intense heat and burning feeling), *trishna* (excess thirst), and *pitatvak* (yellowish skin discoloration) are

typically observed in *Pitta vriddhi* associated with hyperthyroidism.

Treatment Approach - Management of hyperthyroidism can be designed to soothe the aggravated Vata and Pitta, to calm the heightened jatharagni and dhatvagni.

MANAGEMENT:

Ayurveda acknowledges the profound link between the mind (Manas) and the body (Sharira), with hormones significantly influencing this relationship by impacting emotions, thought processes, and general mental wellness. In this context, Ayurveda recommends practices such as meditation and yoga to help balance the endocrine system. Additionally, Ayurveda offers various strategies for managing Conditions related to the endocrine system can be managed through modifications in lifestyle, Panchakarma treatments, the use of Rasayana, herbal medicines. Kanchanar guggul is regarded as the preferred remedy for Granthi vikar. Chandraprabhavati is also recommended for gandmala and is highly effective in reducing swelling. Brahmi vati is a medhya rasayana that is commonly used for its various benefits, as it helps to regulate the nervous system. It promotes the synthesis of T4 because of its energizing properties. Ashwagandha is a recognized rasayana remedy with antioxidant effects, and it enhances thyroid function. Yoga: Sarvangasana is the most appropriate and beneficial pose for issues related to the thyroid gland. Pranayama: The "Ujjayi" technique is the most beneficial Pranayama for thyroid issues. It has a calming and invigorating influence on the throat region. Anuloma-Viloma and Kapalbhathi are also effective practices. Pranayama aids in boosting the body's metabolic rate.

Specific for hypothyroidism - Some useful compound formulations for treating hypothyroidism include Kanchanar Guggulu (primarily made up of Bauhinia variegata and

Commiphora mukul), Barunadi Kasaya (a decoction of Crataeva nurvala), Triphala (a mixture of Emblica officinalis, Terminalia chebula, and Terminalia bellirica), Aswagandharista (mostly made of Withania somnifera), Mahayograj Guggulu (primarily composed of Commiphora mukul), and Chandraprabha Vati (containing Commiphora mukul as a significant ingredient). Research conducted by Kaur Jagmeet and Chauhan Milan in India indicated that the combination of Kanchanar Guggulu, Trivit Avaleha (Operculina turpethum), and Varunadi Kasaya effective in managing hypothyroidism.

In research conducted by Panda and Kar, Ashwagandha demonstrated an elevation in serum T4 levels, while Kanchanar boosted both serum T3 and T4 levels. Both plant extracts shown antiperoxidative qualities and increased the activity of hepatic glucose-6-phosphatase. Withania somnifera and Bauhinia purpurea in the control of circulating thyroid hormone levels in female mice [Panda S, Kar A (1999). J Ethnopharmacol 67: 233-239.]

Herbs such as Brahmi have been shown to raise T4 levels, indicating its potential thyroid-stimulating effects. [Kar A, Panda S, Bharti S (2002) Relative efficacy of three medicinal plant extracts in the alteration of thyroid hormone concentrations in male mice. Journal of Ethnopharmacol]

According to a study by Tripathi, Guggulu can improve iodine uptake into thyroxin and promote the conversion of T4 to T3 by proteolytic action. [Malhotra OP, Tripathi SN, Tripathi YB, 1984] Commiphora mukul-derived Z guggulsterone's ability to stimulate the thyroid. Planta Med 54: 78-80]

Guggulu may offer benefits for hypothyroidism treatment and possesses strong antioxidant properties. [Panda S, Kar A (2005) Guggulu (Commiphora mukul)

potentially ameliorates hypothyroidism in female mice. *Phytother Res* 19: 78-80.]

Matsyasana, Halasana, Suryanamaskara, and Suptavajrasana can be beneficial for those with hypothyroidism. These yoga practices apply significant pressure on the gland, potentially leading to advantageous effects by enhancing blood flow to the gland.

Specific for hyperthyroidism- Numerous native medicinal plants are utilized in the treatment of hyperthyroidism, enhancing the patients' quality of life. The properties and benefits of Madhuyasti, Shankhapushpi, Guduchi, Satavari, and Ashwagandha are beneficial in managing hyperthyroidism. Madhuyasti (*Glycyrrhiza glabra*) supports the proper functioning of the thyroid glands. Shankhapushpi (*Convolvulus pluricaulis*) helps in regulating thyroid activity. Extracts from its roots lower the conversion of T4 to T3. Guduchi (*Tinospora cordifolia*) has a regulating influence on the thyroid glands. Satavari (*Asparagus racemosus*) reduces the levels of T3 and T4. Ashwagandha (*Withania somnifera*) manages the functions of the thyroid gland. These medications can be viewed as effective treatments for alleviating symptoms related to hormonal imbalance and other non-constitutional signs of hyperthyroidism, including fatigue, weight loss, increased appetite, hyperacidity, oligomenorrhea, amenorrhea, palpitations, and weakness.

CONCLUSION:

The regular functions of the thyroid promote a healthy balance in body physiology, whereas irregular activity can lead to various diseases. In the same way, a balanced state of Dosha supports normal bodily functions, while an imbalance in Dosha can lead to dysfunctional organ activity.

Thyroid disorders are hormonal issues that consist of a variety of symptoms affecting different body systems. Ayurvedic texts do

not provide direct references to the anatomy and physiology of the thyroid gland. Therefore, there is a significant need to elucidate the topic from an Ayurvedic viewpoint. This has been achieved effectively by contrasting the characteristics of the physiological functions of thyroid hormones described in contemporary medical literature with the terminology used in Ayurveda.

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