

## **HYPOTHYROIDISM – AN AYURVEDIC PERSPECTIVE**

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### **ABSTRACT**

Hypothyroidism refers to a hypometabolic state with deficient secretion of thyroid hormones due to various reasons. The global incidence of hypothyroidism is increasing alarmingly as people are exposed to junk foods and stressful life. The synthesis and secretion of thyroid hormones are regulated by the HPT axis and the gut hormones namely Ghrelin and Cholecystokinin. There is a close resemblance between the functions of thyroid hormones and *Karma* of *Agni*. The relationship between *Kayagni* and *Dhatwagni* can be viewed in perspective of the gut-thyroid relationship. In Ayurvedic view, hypothyroidism can be understood as a *Santarpana Janya Vyadhi* characterized by *Agnimandyam* at *Koshta* and *Dhatu* levels. The clinical signs and symptoms depend on the extent of involvement of *Srotases*. Hence the basic line of treatment of hypothyroidism is *Apatarpanam*. It can be done by correcting the *Agni* at *Koshta* and *Dhatu* levels followed by *Vatanulomanam*. The *Shodhana Chikitsa* can be selected after proper assessment of the *sroto dushti lakshanas* and the level of *Dhatwagni Mandyam*. The *Shamana Oushadhis* with *Vata kaphahara* and *Agni Deepana* properties are used. Here an attempt is made to understand hypothyroidism as a *Mandagni Avastha* and its management with the fundamental principles of Ayurveda.

**Keywords:** *Apatarpanam, Dhatwagni, Hypothyroidism, Kayagni, Santarpana janyavyadhi*

### **INTRODUCTION**

The Thyroid gland is considered to be one of the most important organs of the endocrine system as it regulates nearly all the bodily functions including metabolic, respiratory, cardiovascular, digestive, nervous and reproductive system ei-

ther directly or indirectly. In ayurveda, thyroid gland can be understood as structure comprising of *prana vata, udana vata, kapha dosha, mamsa* and *medo dhatu*. *Acharya Charaka* in *Sareera sthana* mentioned about two structures in *Kanta*

*pradesha* which are *Kaphaja* in nature. This can be compared with the thyroid gland and its lobes. Lack of thyroid hormone or resistance of the body tissue to the thyroid hormone with respect to metabolic demand results in disorder called hypothyroidism. There is 2 - 5 % prevalence of hypothyroidism in developed world [1]. The prevalence of subclinical hypothyroidism in the developed world is approximately 4-15%.. Incidence of hypothyroidism is more in females and elderly patients [2]. This review is carried out with an aim to understand the condition Hypothyroidism with Ayurvedic principles and to formulate the possible line of management in Ayurveda.

#### **AIMS AND OBJECTIVES:**

- 1) To understand the possible pathogenesis of hypothyroidism in Ayurveda.
- 2) To formulate the possible line of management of hypothyroidism in ayurveda.

#### **Thyroid gland – Physiologic Anatomy**

Thyroid gland is a butterfly shaped gland. It is located inferior to the larynx, anterior to the trachea. It's two lobes are connected by the isthmus. ( 50% of persons have a small third lobe called pyramidal lobe.) Normal mass is 15 to 20 gram. It is made of microscopic spherical masses called follicles. A secretory substance is present in follicle called colloid. Colloid is made of a glycoprotein called thyroglobulin. Thyroglobulin produces thyroid hormones. They are Triiodothyronine (T3), Tetra iodothyronine (T4) and Calcitonin. [3].

#### **Functions of thyroid hormones:**

It increases cellular metabolic activity, blood flow and cardiac output and rate and secretion of digestive juices. It stimulates carbohydrate, fat and protein metabolism. It regulates devel-

opment and growth of nervous tissue and bones[4].

#### **Role of gut in thyroid hormones regulation:**

In gut there are two hormones which control the secretion of thyroid hormones from the thyroid gland. They are Cholecystokinin and Ghrelin. Cholecystokinin is secreted from the endocrine cells of duodenum. Ghrelin is secreted by the oxyntic cells of stomach. The increased secretion of Cholecystokinin and Ghrelin results in the increased secretion of thyroid hormones. [5]. Normal plasma levels of thyroid hormones: [6].

TSH - 0.5 – 4.7mmu/L (Secreted by anterior pituitary gland and it helps in the secretion of T3 and T4 from thyroid gland).

Thyroxine (T4) - 58-140 nmol/L/

Tri-iodothyronine (T3) -0.92 – 2.78nmol/L

Free T4 (FT4) -10.3 -35pmol/L

Free T3 (FT3) -0.22 -6.78nmol/L

#### **Thyroid Hormone Variations: [7].**

##### **Hypothyroidism**

It is characterized by increase in level of TSH with either reduced T3 and T4 or normal T3 and T4.

##### **Hyperthyroidism**

It is characterized by decrease in level of TSH with either increased T3 and T4 or normal T3 and T4.

#### **HYPOTHYROIDISM: [8].**

Hypothyroidism is a hypometabolic clinical state resulting from inadequate secretion of thyroid hormones for prolonged periods or rarely from resistance of the peripheral tissues.

As a consequence of hypothyroidism, there can be structural change, functional change or both.

#### **Classification:**

Based on site of pathology there are three types: [9].

Primary –Due to reduced production of thyroid hormones T3 and T4

Secondary – Due to defect in pituitary TSH synthesis or due to defect in hypothalamic TRH

If the pathology is at secondary level, treatment has to be given at pituitary or hypothalamus.

Based on status of thyroid hormones:

Clinical Hypothyroidism	-	In-
Increased TSH with reduced T3 and T4		
Sub clinical Hypothyroidism	-	In-
Increased TSH with normal T3 and T4		

### SIGNS AND SYMPTOMS OF HYPOTHYROIDISM: [10].

**Symptoms** are Tiredness, Dryskin, Hairloss, Dyspnoea, Constipation, Hoarse voice, Cold

intolerance, Impaired memory, Menorrhagia/Oligomenorrhoea and Weight gain with poor appetite.

**Signs** are myxedema, bradycardia, serous cavity effusions, delayed tendon reflex relaxation (WOLTMAN’S SIGN), ECG changes - sinus bradycardia, Low voltage complex with ST wave abnormality.

### MANAGEMENT OF HYPOTHYROIDISM: [11].

The aim of the management is to normalize TSH into the lower half of the reference range. It can be done by daily replacement with levothyroxine. 1.6 to 1.8 mug/kg body weight is the normal dose for young adults. Dose is adjusted based on TSH levels. It is ideally taken 30 min before breakfast.

## DISCUSSION

**Table 1:** Analysis of thyroid hormones functions with *Karma* of *Agni*. [12].

Thyroid hormone functions	<i>Karma</i> of <i>Agni</i>
Facilitate metabolism	Does <i>Pachanam</i> / <i>Pakthi</i>
Metabolism results in heat liberation	<i>Tapayati Ushmanaam Utpaadayati Iti Pittam</i>
Helps to sustain life	<i>Balam Aarogyam Ayuscha Praanascha Agnou Pratishtita.</i>
Promotes growth	It does <i>Upachaya</i>
It increases rate of secretion of digestive juices	Maintains <i>Prabha/ Kanthi</i>
Maintains libido in males	Provides <i>Shouraym /Paurusham</i>
Regulates the function of hippocampus responsible for memory	Provides <i>Medha</i> or <i>Jnana Dhaaranam</i>
Eliminates nitrogenous wastes from cells	<i>Pachatyannam Vibhajathe Sarakitou Pruthakthata</i>
Provides energy to cells	Provides <i>Utsaha</i>

### KAAYAGNI AND DHATWAGNI IN THYROIDOLOGY:

From the function of thyroid hormones it is evident that the thyroid hormones are functionally equivalent to the *Dhatwagni* which is once again a part of the *Kayagni*.

Since there is a direct and invariable relationship between *Kayagni* and *Dhatwagni*, here in thyroidology gut hormones can be understood as *Kayagni*.

“*Swasthasthasya Kaayagneramsha Dhatushu Samshrita*” [13].

*Tesham Saada Atideepthibhyam Dhathu Vruddhikshayodbhava*”

### HYPOMETABOLISM AS MANDAGNI:

“*Tayir Bhaved Vishama Teekshno Mandachaagni Samaihi Samaha*” [14].

As per *AshtangaHrudaya*, *Mandagni* is attributed to the effect of *Kapha Dosh*a on the status of *Agni*.

‘Mandasthu samyagapyannam upayuktam chirat pacheth’<sup>[15]</sup>.

As per *Ashtanga Sangraha*, Mandagni refers to a state of Agni in which Pachana Kriya is taking place with prolonged duration i.e Chiraat Pachanam.

Hence in hypometabolic state like hypothyroidism reduced rate of Pachana Kriya is taking at two levels – Koshta and Shaaka.

### COMPARISON OF AAMA LAKSHANA WITH HYPOTHYROIDISM:

‘Ushmano Alpabaltvene Dhatumadyamapachitham Dushtam Aamashayagatam Rasamaamam Prachakshate’<sup>[16]</sup>.

In hypothyroidism, Aama formation takes place at two levels:

At Koshta due to Dosha Vaishamyam and at Dhatu due to SrotoDushti

The lakshanas of Aama are being compared with the clinical features of Hypothyroidism.

**Aama Avastha**<sup>[17]</sup>.

#### Hypothyroidism

Srotorodha- Fluid retention

Balabhramsha- Generalized body weakness

Guarava- Heaviness of body

Aalasyam and Klama - Lethargy

Apakthi- Lack of appetite

Anilamoodatha- Brady cardia

Mala sanga- Constipation

### ASSESSMENT OF DOSHA AVASTHA WITH CLINICAL FEATURES OF HYPOTHYROIDISM:

**VaataVruddhi**.<sup>[18]</sup>

Vaata Vruddhi Lakshanas are Karshnya, Ushna Kamatwa, Aanaha, Shakrut graha, Bala Bhramsha, Indriya Bhramsha and Bhrama.

VataVruddhi is due to increase in Ruksha and Sheeta Guna of Vata.

**Kapha Vruddhi**.<sup>[19]</sup>

Kapha Vruddhi Lakshanas are Agni sadana, Aalasya, Gauravam, Shvaityam, Shaityam, Swasa, Kasa and Atinidrata.

Kaphavruddhi is due to increase of Manda, Guru and Sthiraguna of Kapha.

**Pitta Kshaya**.<sup>[20]</sup>

Pitta Kshaya Lakshanas are Agnimandyam, Sheetam and Prabha Hani.

Pitta Kshaya is due to the Kshaya of Ushna and Teekshna Guna of Pitta.

Hence in hypothyroidism there is Vata Kapha Vruddhi and Pitta Kshaya.

**Table 2:** Analysis of Sroto Dushti Lakshanas in hypothyroidism:<sup>[21]</sup>

Srotas	Lakshanas
Annavaaha Srotas	Presents with Anannaabhilashanam
Rasavaaha Srotas	Presents with Ashraddha, Gauravam, Tandra, Angamarda, Pandutvam, Srotorodha and Klaibyam
Raktavaaha Srotas	Presents with Asrugdara, Kushta, Switra
Mamsavaaha Srotas	Presnts with Gandamala, Galaganda and Atimamsa
Asthivaaha Srotas	Presents with Kesa Dosha and Nakha Dosha
Majjavaha srotas	Presents with Parva ruk and Bhrama
Shukravaha srotas	Presents with Klaibyam and Aharshanam
Aartavavaaha srotas	Presents with Vandyatvam and Aartava naasham

**PROBABLE SAMPRAPTI OF HYPOTHYROIDISM IN AYURVEDA:**

After the analysis of *Dosha, Avastha, Agni* and *Srotos*, probable *Samprapti* of hypothyroidism can be understood in the following manner.

- Intake of *Kaphakara* and *Agnimandya Janaka Ahara* and *Vihara* leads to *Kapha Pradhana Tridosha Prakopa in Pitta Sthana i.e Adho Aamashaya*.
- The *Dosha Prakopa* will further results in *Agnimandyam at Koshta level*.
- *Agnimandyam* at *Koshta* results in *Uttarottara Dhatwagni Mandyam* and *Aama* formation takes place at multiple *Dhatus*.

- The *Dhatwagni Mandyam* at multiple *Dhatus* exhibits *Lakshanas* similar to the signs and symptoms of Hypothyroidism.

**CHIKITSA OF HYPOTHYROIDISM**

Hypothyroidism can be understood as a *Santarpana Janya Vyadhi* occurred due to the intake of *Vishtambhi, Guru, Snigdha* and *Sheet aaaharas*.

Hence the line of management can be *Apatarpana*. It can be done by *Shodhana* and *Shamana*.

Proper *Rasayanas* can be administered after the *Kaya Shuddhi* for maintaining the *Kayagni* and *Dhatwagni* in their optimum function.

**Table 3: VAMANA IN HYPOTHYROIDISM:**

WHY	WHEN
Due to <i>Kapha Pradhana Tridosha Avastha</i> <sup>[22]</sup>	Presents with <i>Kapha Vruddhi Lakshanas</i> Or Involvement of <i>Rasa, Mamsa, Medo or Shukra Dhatu</i> or Presence of <i>Sthoulyata</i> . Or in the absence of co morbidities.

**Table 4: VIRECHANA IN HYPOTHYROIDISM:**

WHY	WHEN
Due to <i>Vyadhi Utpathi.e Adho Aamashaya Janyavyadhi, Pitta Sthanagata Kapha</i> and for <i>Vaata anulomanam</i>	If there is an involvement of <i>Raktavaha Srotas</i> or <i>Swedavaha Srotas</i> . If there is <i>Malasanga</i> .

**Table 5: BASTHI IN HYPOTHYROIDISM:**

WHY	WHEN
Due to the involvement of <i>Vata</i> . Since <i>Basthi</i> is effective therapy for <i>Vata anulomanam</i> and is indicated in <i>Shaakagata</i> and <i>Koshta gata rogas</i> . <i>Basthi</i> is also mentioned as <i>Agnikrut</i> .	If there is an involvement of <i>Asthi</i> and <i>Majja dhatu</i> In conditions like <i>MalaSanga, Rajo Naasha ,Sthoulya Rogi, Ksheena Indriya</i> <sup>[23]</sup> .

**Table 6: COMMON BASTHI YOGAS AND ITS APPLICATION**

<i>Niruha Basthi</i>	<i>Avastha</i>
<i>Erandamooladi Niruha Basthi</i> <sup>[24]</sup> .	In conditions like muscle ache, stiffness, constipation.
<i>Lekhana Basthi</i> <sup>[25]</sup> .	In conditions like weight gain, facial puffiness.
<i>Dwipanchamooladi Niruha Basthi</i> <sup>[26]</sup> .	In conditions like myxedema, constipation, muscle ache and stiffness.

<b>Anuvasana Basthi</b>	<b>Avastha</b>
<i>Varunadi Ghritam</i> <sup>[27]</sup> .	In conditions like weight gain, lack of appetite .
<i>Guggulu Tiktaka Ghritam</i> <sup>[28]</sup> .	In conditions like enlargement of thyroid gland, Thyroid nodules, Skin manifestations, .muscle ache, stiffness, dyspnea, myxedema.
<i>Kalyanaka Ghritam</i> <sup>[29]</sup> .	In conditions like lack of concentration, lack of memory, depression, lack of appetite, skin manifestations, loss of libido, infertility.

### SHAMANA CHIKITSA IN HYPOTHYROIDISM

The *Shamana Chikitsa* in hypothyroidism should be adopted by considering the principles such as *Aama Pachanam*, *Agni Deepanam*, *Vatakapha Shamanam* and *Mano Harshanam* through *Satwaavajaya Chikitsa*<sup>[30]</sup>.

#### SHAMANA OUSHADHI:

##### **KashayaYogas:**

*Kashaya Yogas* include *Varunadi Kashayam*, *Punarnavadi Kashayam*, *Trayanthyadi kashayam*, *Hamsapathyadi Kashayam* etc.

##### **ChurnaYogas:**

*Churna yogas* include *Vaiswanara churnam*, *Panchakola churnam*, *Triphala Churnam*, *Shaddharana Churnam* etc

##### **Gutikayogas:**

*Gutika yogas* include *Chitrakadi vati*, *Kanchanara guggulu*, *Shivagutika* etc.

##### **Aasava/Arishtam:**

*Aasava* includes *Ayaskriti*, *Punarnavasavm* and *Chitrakasavam*

##### **Ghritam:**

*Ghrita yogas* include *Varunadi ghritam*, *Guggulu tiktaka ghritam*, *Kalyanaka ghritam* etc.

**Table 8: MANO HARSHANA CHIKITSA IN HYPOTHYROIDISM** <sup>[31]</sup>.

STEPS	APPLICATION
<i>Jnanam</i>	Convincing the patient about the disease and its present condition (Hypothyroidism)
<i>Vijnanam</i>	Informing the patient and family that the present condition is due to hormonal imbalance.
<i>Dhairyam</i>	Giving psychological support to the patient.
<i>Smriti</i>	Deviating the negative thoughts and hypothyroidism from the patient.
<i>Samathi</i>	Includes techniques like <i>aasanas</i> and <i>Pranayama</i> .

### ADVISEABLE RASAYANAS IN HYPOTHYROIDISM

<sup>[32]</sup>.

*Bhallataka* – Due to its *Kaphahara*, *Sroto Shuddhikara*, *Medhya* and *Vibandha hara* properties.

*Lashuna* - Due to its *Teekshna*, *Sroto Shodhana*, *Medohara* and *Aavarana hara* properties

*Shilajatu* - Due to its *Kapha hara*, *Medohara* and *Sroto Shodhaka* properties.

### CONCLUSION

Hypothyroidism can be understood as a hypo activity of *Agni* at *Koshta* and *Dhatu* level. The knowledge of gut-thyroid relationship helps in understanding the *Kayaagni* and *Dhatwagni* in thyroidology. The critical analysis of symptomatology of hypothyroidism helps us to identify it as a *Kapha Pradhana Tridoshaja Vyadhi* resulting due to *Agnimandyam* at *Koshta* and *Dhatu* levels. Hence, the *Lakshanas* depend on the extent of involvement of *Dhatu*. So the fun-



damental treatment principle in hypothyroidism is to restore the *Karmukata* of *Agni* at both *Koshta* and *Dhatu* levels. This can be achieved through *AmaPachanam*, *Agni Deepanam*, *Sroto Shodhanam* and administration of appropriate *rasayanas*.

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