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**Case Report**


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## Single Drug Therapy in Sub Clinical Hypothyroidism - A Case Report



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### ABSTRACT

**Introduction:** The active T3 & T4 values are absolutely normal with increased TSH level. This case demonstrates the therapeutic possibilities of the Ayurvedic mode of management in sub clinical hypothyroidism where predictable treatment was incapable to withstand the desired dose and effects. **Clinical Findings:** A 38-year-old female patient came with a complaint of lethargy; stressful household works for 4 months. **Diagnosis:** diagnosed as subclinical hypothyroidism. **Intervention:** After appropriate analysis of the patient based on Ayurvedic parameters, the patient was treated with an Ashwagandha choorna for the period of 42 days. Lifestyle modifications and diet changes were also advised. **Outcome:** There was a significant reduction in the level of TSH, were T3 and T4 were within normal limit. **Conclusions:** Adaptation of Ayurvedic intervention can augment the treatment for subclinical hypothyroidism.



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## INTRODUCTION

Hypothyroidism refers to the common pathological condition of thyroid hormone deficiency. The definition of hypothyroidism is based on statistical reference ranges of the relevant biochemical parameters<sup>1</sup>. If untreated, it can lead to adverse health effects. Because of the large variation in clinical presentation and general absence of symptom specificity, the definition of hypothyroidism is predominantly biochemical. Overt or clinical primary hypothyroidism is defined as thyroid-stimulating hormone (TSH) concentrations above the reference range and free thyroxine concentrations below the reference range<sup>2</sup>. Subclinical hypothyroidism, which is commonly regarded as a sign of early thyroid dysfunction, is defined by TSH concentrations above the reference range and free thyroxin concentrations within the normal range. Whether the existing reference ranges of TSH and free thyroxine should be used to define thyroid dysfunction is a matter of debate with special reference basal metabolic rate. This issue is of clinical importance because the reference ranges are generally used as a doorstep for treatment. In *Ayurveda*, hypothyroidism is connected with *Agni dusti*, *Medo dusti*, *Gandamala & Galaganda &* considered under the concept of *Bahudoshavastha* (Symptoms of Different system) accordingly line of treatment decided by *Yukti* of Physician.

### Case report

A case of 38 years female patient from chachadi, belgaum came with the complaints of hair fall, lethargy, stressful household works (irritated to handle) and menstrual irregularities for 4 months. She is not known case of diabetes and hypertension. The patient was a vegetarian, having a reduced appetite. Her bowel habits were consistent and clear, micturition frequency was 3–4 times/day. She had sound sleep and no remarkable addictions. Past illness history of the patient revealed that there was no any significant family history related to above said problems. She consulted some local hospital were they asked her to get done her thyroid profile and there was a raise in her TSH level and T3 and T4 were in normal limit.

Her blood investigation on the date 14/10/2022 showed **TSH 11.8 $\mu$ IU/mL(0.4-4.2)** ,T3 115.13 ng/mL(35-193) and T4 $\mu$ g/dL(6.09-12.23) .

An overall examination states that entire vitals are within standard limits. The patient's body mass index (BMI) was 17.96 considered to be underweight with a height of 160 cm and a weight of 46 Kg. Systemic inspections disclosed no significant abnormalities. The detailed *ayurvedic* examination regarding *Dashavidha* and *Ashtavidha pareeksha* are explained.

### Personal history

Bowel: Clear

Appetite: Reduced

Micturition: Clear

Sleep: Disturbed

Diet: Vegetarian

Habits: No

### Diagnosis

Sub clinical Hypothyroidism relatively can be correlated to *Agni Dusti*.

### Dashavidha pariksha

*Prakriti*                      *kapha vata*

*Vikriti*                      *Tridosha, Mamsa, Medha, Rakta*

*Sara*                              *Madyama*

*Satwa*                          *Madyama*

*Samhanan*                      *Madyama*

*Pramana*                        *Madyama*

*Satmya*                         *Madyama*

*Ahara shakti*                    *Madyama*

*Vihara shakti*                   *Madyama*

*Vaya*                              *Madyama*

### Ashtavidha pariksha

*Nadi*                              *Regular vata*

*Mala*                              *Prakrita*

Mutra        Bahu mootrata

Jihwa        Alipta

Shabdha     Sphasta

Sparsha     Anushnasheeta

Drik         Prakrita

Akruti       Madyama

### Treatment strategy (intervention)

Cap *Ashwagandha choorna* 4-4-4 Given for 42 days.

Each capsule contains 500mg of *Ashwagandha choorna* in it.

So that 6 gms of *Ashwagandha choorna* has been advised per day.

### Assessment criteria

	0 <sup>th</sup> day	42 <sup>nd</sup> day
Height	160cm	160cm
Weight	46kg	48 kg
BMI	17.96	18.75
Waist circumference	27inch	27.5inch

### Laboratory investigation (biochemical assessment)

	0 <sup>th</sup> day	42 <sup>nd</sup> day
T3	115.13      (35-193)	1.05      (0.64-1.52)
T4	12.10      (6.09-12.23)	9.17      (4.87-11.72)
TSH	11.80      (0.4-4.2)	8.68      (0.35-4.94)

CLINICAL BIOCHEMISTRY				
Test Name	Obtained Value	Units	Bio. Ref. Intervals (Age/Gender specific)	Method
<b>Thyroid Profile I</b>				
Tri-Iodothyronine Total (TT3)	115.13	ng/dL	35-193	CMA
Thyroxine - Total (TT4)	12.10	µg/dL	6.09 - 12.23	CLIA
Thyroid Stimulating Hormone (TSH)	11.80	µIU/mL	0.4-4.2	CMA

Pregnancy			
	TSH(µIU/mL)	TT3(ng/dL)	TT4(µg/dL)
1 Trimester	0.10-2.50	89.9-196.6	4.4-11.5
2 Trimester	0.2-3.00	86.1-217.4	4.9-12.2
3 Trimester	0.3-3.00	79.9-186	5.1-13.2

**Interpretation:**

- Assay results should be interpreted in context to the clinical condition and associated results of other investigations.
- Previous treatment with corticosteroid therapy may result in lower TSH levels while Thyroid hormone levels are normal.
- Results are invalidated if the client has undergone a red blood cell scan within 7-14 days before the test.

DEPARTMENT OF IMMUNOLOGY				
Test Name	Result	Unit	Bio. Ref. Range	Method
<b>THYROID PROFILE (TOTAL T3, TOTAL T4, TSH) , SERUM</b>				
TRI-IODOTHYRONINE (T3, TOTAL)	1.05	ng/mL	0.64-1.52	CMA
THYROXINE (T4, TOTAL)	9.17	µg/dL	4.87-11.72	CMA
THYROID STIMULATING HORMONE (TSH)	8.680	µIU/mL	0.35-4.94	CMA

**Comment:**  
Serum TSH concentrations exhibit a diurnal variation with the peak occurring during the night and the nadir occurring between 10 a.m. and 4 p.m. In primary hypothyroidism, thyroid-stimulating hormone (TSH) levels will be elevated. In primary hyperthyroidism, TSH levels will be low. Elevated or low TSH in the context of normal free thyroxine is often referred to as subclinical hypo- or hyperthyroidism, respectively. Physiological rise in Total T3 / T4 levels is seen in pregnancy and in patients on steroid therapy.  
Recommended test for T3 and T4 is unbound fraction or free levels as it is metabolically active.

**Note:**

For pregnant females	Bio Ref Range for TSH in uIU/ml (As per American Thyroid Association)
First trimester	0.1 - 2.5
Second trimester	0.2 - 3.0
Third trimester	0.3 - 3.0

**RESULTS**

After the completion of 42 days of treatment with *ashwagandha choorna*<sup>3</sup> before and after treatment outcome as follows that is in biochemical parameters T3 within normal limit, T4 within normal limit & TSH the value of TSH reduced from **11.8µIU/mL to 8.6µIU/mL** and in objective parameters increase in weight by 2kg.

**DISCUSSION**

Selection of drug is a major role in present case, were the etiological factor was stress<sup>4</sup> due to this *Ashwagandha* has been selected.

Oral intake of *Ashwagandha choorna* for a period of 42 days (1 *Mandala*) produced a significant decrease in serum TSH level. Hypothetically the result indicates a possible role for *ashwagandha* in regulating hypothalamic–pituitary– thyroid axis by lowering the adverse

effects of stress hormone ie cortisol which is a variant form of steroid . The antistress and cortisol lowering effect of *ashwagandha* may provide a suitable explanation for the current outcome. An inverse relationship exists for regulation of hypothalamic–pituitary–adrenal axis.

Chronic stress disturbs HPA axis activity by increasing cortisol levels, which in turn inhibits HPT axis end up with disturbed thyroid function .in such cases stress management plays a very important role rather than artificial hormonal replacement therapy. Considering this view we select *Ashwagandha* which is considered as best antistress drug by enhancing adaptive immunity of the person. Treatment with ashwagandha lowers serum cortisol levels by down regulation of HPA axis<sup>5</sup>, which in turn upregulates HPT axis to normalize the levels of the thyroid indices. Other factors like inflammation and dopamine levels also up regulate HPA axis and down regulate HPT axis. The anti-inflammatory<sup>6</sup> and antidopaminergic properties of *Ashwagandha* may contribute to the thyroid modulating effect.

Weight of the patient improved hence BMI of the patient improved.

## CONCLUSION

The case report assessment disclosed the decrease in the level of TSH, inferred that drug selection WSR etiological factors shows significance outcome. That is ashwagandha in the management of subclinical hypothyroidism due to stress. Were stress is etiological factor then the drug of choice is *ashwagandha*.

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