

## Management of *Qillat-i-Darqiyyat* (Hypothyroidism) with a Combination of Unani Drugs *Asgand* (*Withania somnifera* (L.) Dunal) and *Brahmi* (*Bacopa monnieri* (L.) Wettst.) - A Case Study

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### Abstract

*Qillat-i-Darqiyyat* (Hypothyroidism) is one of the most common disease conditions under endocrine system, occurring in 5% of individuals. A 19 years old female patient, approached the Outpatient department of NRIUMSD, Hyderabad, with complaints of weight gain, loss of hair, poor appetite, and general weakness and was treated with Unani medicines i.e., *Asgand* (*Withania somnifera*) and *Brahmi* (*Bacopa monnieri*) for 8 weeks. All the basic blood and urine investigations were done before and after the treatment along with the thyroid profile test. After 8 weeks of treatment, the patient showed significant relief in symptoms as assessed by a decrease in Zulewski's clinical score which was 7/12 point before treatment and 4/12 points after treatment, and a decline in TSH level from 6.73  $\mu$  IU/mL to 2.53  $\mu$  IU/mL. Although, the serum T3 and T4 levels remained within normal range during the course of treatment. Thus, this study is suggesting that Unani medicine can be used effectively in the management of Hypothyroidism.

**Keywords:** *Qillat-i-Darqiyyat*, *Asgand* (*Withania somnifera*), *Brahmi* (*Bacopa monnieri*), Hypothyroidism, Unani medicine.

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### INTRODUCTION

Hypothyroidism is a state of hormone deficiency caused by intrinsic thyroid gland dysfunction which disrupts the synthesis and secretion of T4 and T3 hormones in the body. ([www.thyroid.org](http://www.thyroid.org)). Hypothyroidism is one of the most common endocrine disease, occurring in 5% of individuals. Mild hypothyroidism is present in as many as 15% of older adults. It is more common in women. A survey conducted by the Indian Thyroid Society depicts 1 in 10 adults in India suffer from hypothyroidism. According to the survey, hypothyroidism is three times more prevalent among women than men especially in the age group of 46-54 years. A major proportion of the patient population may go undetected and untreated even as it continues to impair the daily quality of life, work performance, and economic productivity (Unnikrishnan AG *et al.*, 2013). It is associated with symptoms such as tiredness, weakness, dry skin, feeling cold, hair loss,

difficulty in concentration, poor memory, constipation, weight gain with poor appetite, dyspnoea, hoarseness of voice, menorrhagia (later oligomenorrhoea or amenorrhoea), paraesthesia, impaired hearing; and signs like dry coarse skin, cool peripheral extremities, puffy face, hands and feet (myxoedema), diffuse alopecia, bradycardia (Kasper DL *et al.*, 2015). In conventional systems of medicine hormone replacement therapy with levothyroxine is being used effectively in the management of hypothyroidism, but it can decrease the TSH level to a subnormal range and can cause serious side effects such as osteoporosis, atrial fibrillation, myocardial ischemia, etc.

In the Unani system of medicine (USM) hypothyroidism has not been described as an individual entity but can be correlated with the clinical features of *Su'-i-Mizāj Bārid* (abnormal cold temperament). In a recent development, the Central Council for Research in Unani Medicine (CCRUM), an autonomous

organization under the Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy (AYUSH), Government of India has standardized and defined various Arabic, Persian and Urdu clinical and non-clinical terminologies used in Unani medicine and published a document known as "Standard Unani Medical Terminology (SUMT)" (B. Abdullah Ismail *et al.*, 2021). In SUMT, *Qillat-i-Darqiyyat* defines as the subnormal activity of the thyroid gland and its possible English equivalent is hypothyroidism. According to ancient Unani physicians the normal temperament of the thyroid gland is tend to be hot (Ahmed SI;1980) as it receives more blood supply, whereas in *Qillat-i-Darqiyyat* (Hypothyroidism) the temperament of the thyroid gland changes from hot to abnormal cold. Some Unani scholars consider hypothyroidism as *Balghmā* (Phlegmatic) disease. *Ghlaba-i-Balgham* (domination of phlegmatic humour in the body) is characterized by *Khushk was Khurdarī Jild* (dry and coarse skin), *Shuhūb* (skin pallor), *Lisān Samīk* (thick tongue), *Farḥ al-Nawm* (excessive sleep), *Takān wa Kasalmandi* (lethargy and somnolence), *Nabḍ Baṭī wa Mutaḥāwit* (low volume pulse), *Khaḥqān* (palpitation), *Tahabbuj* (puffiness of face), *Kund Zahni* (diminished intellectual functions), *Du'f al-Ishtihā'* (decreased appetite), etc (Jurjānī SIH;2010, Majūsī AIA; 2010, Ibn Sīnā; 2007, Zaidī IH; 2011, Ibn Rushd; 1984, Ahmad SI;1983, Rāzi ABMIZ; 1991). These signs and symptoms are more and less similar and found in the patients of hypothyroidism (Saifi; 2017). American Thyroid Society has conducted a survey demonstrating that patients taking natural preparations, rather than synthetic hormone replacement therapy or combination therapy, were more satisfied with their treatment (ATA 2018).

In the Unani system of medicine *Asgand* (*Withania somnifera*) and *Brahmi* (*Bacopa monnieri*) have been used for centuries for various ailments; and a combination of *Asgand* (*Withania somnifera*) and *Brahmi* (*Bacopa monnieri*) is being used for the management of depression, anxiety, and chronic stress (Lee J 2016). None of the studies have evaluated the effect of this drug combination in hypothyroidism. However, it has been shown in most of the pharmacological studies that both the drugs can stimulate the thyroid gland to produce more T4 hormone (Kar A *et al.*, 2002, Bharti *et al.*, 2017, Sharma *et al.*, 2015, Gannon JM *et al.*, 2014, Tiwari *et al.*, 2014, SK Verma & A kumar 2011).

## MATERIALS AND METHODS

### Case Report

A 19 years unmarried female patient presented with complaints of weight gain (since 6 months), poor appetite with loss of hair (since 3 months), and weakness (since 2 months) at the Outpatient Department of the National research institute of Unani medicine for skin disorders, Hyderabad. The patient was asymptomatic 6 months ago, then she started

complaining of weight gain which was gradual in onset (1.5-2 kg per month) with intense loss of hair along with loss of appetite and general weakness due to which she was not able to do daily household chores. There were no similar complaints in the past. There was no history of hypertension, diabetes mellitus, CAD, or other systemic disorders. Family history was not positive for Hypothyroidism. She was non-vegetarian, sleep was excess, bowel and bladder were regular, patient had no addiction to alcohol, smoking, pan, tea, etc. Gynaecological history was not significant. The patient signed the informed consent form for publication of this report.

### GENERAL EXAMINATION

The patient was conscious coherent and cooperative with an average build and good nourishment. The oral cavity was hygienic, there was no pallor, icterus, edema, cyanosis, clubbing or lymphadenopathy. The vitals were stable (Temp:98.6°F, BP:110/70 mmHg, PR:76 bpm, RR:16/min). No abnormality was detected in the cardiovascular, respiratory, nervous, gastrointestinal, and urogenital systems. Examination of the thyroid gland showed no abnormality on inspection and palpation. The temperament of the patient was Balghami (Phlegmatic).

### INVESTIGATIONS

The patient was diagnosed based on signs/symptoms and thyroid function test report. Thyroid-stimulating hormone (TSH) before treatment was 6.73  $\mu$  IU/mL and T3 and T4 were under normal range. Patient undergone all basic investigations such as CBP, ESR, CUE, LFT, RFT, FBS, Lipid profile, and ECG were in normal limits.

### INTERVENTION AND FOLLOW-UP

The treatment was started on 2<sup>nd</sup> of January 2021. The patient received sachets of 6 grams powder containing 3 grams of each *Asgand* (*Withania somnifera*) and *Brahmi* (*Bacopa monnieri*) twice daily with water after meals for 8 weeks. The patient was followed up every 2 weeks to assess the improvement in signs and symptoms based on Zulewski's clinical score and to assess any adverse effect. No concomitant therapy was allowed during the trial period. *Asgand* (*Withania somnifera*) and *Brahmi* (*Bacopa monnieri*) were found to have a thyroid-stimulating property and are being used in Nervine disorders. Preclinical studies have proven the safety and efficacy of both drugs in the management of Hypothyroidism.

### OBSERVATIONS AND OUTCOMES

The assessment of efficacy was done based on clinical features such as rate of increase in weight was reduced, appetite got better and hair fall reduced with overall general well-being and reduction in Zulewski's clinical score from 7/12 points before treatment to 4/12 after the treatment (shown in Table-1). The objective parameters were assessed based on a thyroid function

test which showed a reduction in TSH levels which was 6.73  $\mu$  IU/mL before treatment and 2.53  $\mu$  IU/mL after treatment. There were no adverse effects noted during

and after the trial and all basic investigations were found to be within normal limits after the treatment (shown in Table-2).

**Table-1: Zulewski’s clinical score**

Clinical Features		Based on	0	1 <sup>st</sup> F/U	2 <sup>nd</sup> F/U	3 <sup>rd</sup> F/U	4 <sup>th</sup> F/U
<b>Symptoms</b>							
1	Diminished Sweating	Sweating in the warm room or a hot summer day	1	1	1	1	1
2	Hoarse voice	Speaking voice, singing voice	1	1	1	1	1
3	Paraesthesia	Subjective sensation	0	0	0	0	0
4	Dry skin	Dryness of skin, noticed spontaneously, requiring treatment	1	1	0	0	0
5	Constipation	Bowel habit, use of a laxative	0	0	1	0	0
6	Impaired Hearing	Progressive impairment of hearing	0	0	0	0	0
7	Weight gain	Recorded weight increase, tightness of clothes	1	1	0	0	0
<b>Physical Signs</b>							
1	Slow Movements	Observe patient removing his/her clothes	1	1	1	1	0
2	Delayed Ankle Reflex	Observe the relaxation of the reflex	0	0	0	0	0
3	Coarse Skin	Examine hands, forearms, elbows for roughness and thickening of the skin	1	1	1	1	1
4	Periorbital Puffiness	This should obscure the curve of the malar bone	0	0	0	0	0
5	Cold Skin	Compare the temperature of hands with examiner's	1	1	1	1	1
<b>Sum of all symptoms and signs present</b>			<b>7</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>

**Table-2: Effect of drug on objective and safety parameters**

INVESTIGATIONS	Before treatment values	After treatment values
Haemoglobin (gm/dl)	8.9	8.2
RBC (millions/cumm)	4.5	4
WBC (cell/cumm)	6,500	8,100
Platelets (lakhs/cumm)	3.5	2.0 lakhs/cumm
Neutrophil	65%	67%
Lymphocyte	31%	27%
Monocyte	2%	2%
Eosinophil	2%	4%
Basophil	0 %	0%
ESR 1 <sup>st</sup> hour (mm/hr)	40	40
ESR 2 <sup>nd</sup> hour (mm/hr)	79	82
Blood Urea Nitrogen	7.9	8.4
Serum Creatinine (mg/dl)	0.7	0.5 mg/dl
Serum Bilirubin (mg/dl)	0.28	0.25 mg/dl
Serum alanine amino transferase (SGPT) (IU/L)	19	13
Serum aspartate amino transferase (SGOT) (IU/L)	17	15
Serum alkaline phosphate (ALP) (IU/L)	84	86
Serum Triglycerides (mg/dl)	80	50
Low Density Lipoproteins (mg/dl)	57	50
ECG	Normal	Normal
Total Triiodothyronine (T3) (ng/mL)	1.37	1.18
Total Thyroxine (T4) ( $\mu$ g/dL)	9.4	13.2
Thyroid Stimulating Hormone (TSH) ( $\mu$ IU/mL)	6.73	2.53

## DISCUSSION

It was observed that Unani drugs Asgand (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) were effective in reducing clinical signs and biochemical investigations-TSH. These two drugs have been selected due to their proven efficacy and safety in previous preclinical studies suggesting their thyroid

stimulating activity. In hypothyroidism, the temperament of body changes from normal to abnormal cold. The treatment regimen according to Unani system of medicine is to counteract the abnormal temperament i.e., to provide hot and dry temperament to the body. Asgand (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) based on their hot and dry temperament had

been selected and used for the treatment of hypothyroidism. Sharma *et al.* carried out study on male mice shows that Brahmi (*Bacopa monnieri*) has thyroid stimulating activity and Brahmi (*Bacopa monnieri*) extract has been observed to increase T3 and T4 levels in male mice (Vasundhara *et al.*, 2013).

In a preclinical study conducted in female mice, serum thyroxine (T4) level was significantly increased after daily administration of *Withania somnifera* root extract (1.4 g/kg body wt.) for 20 days (Panda & Kar, 1999). *Asgand* (*Withania somnifera*) enhances the serum T4 level, and it also helps in lowering cortisol levels in body. It is used for treating stress related disorders and in women with sterility.

From the above findings it has been proven in the preclinical studies that *Asgand* (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) possess thyroid stimulating activity. Till now no RCTs have been done on hypothyroidism using *Asgand* (*Withania somnifera*) and Brahmi (*Bacopa monnieri*). In this case report it has been observed that administration of *Asgand* (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) has significant effect in reducing subjective as well as objective parameters. Moreover, *Asgand* (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) were found to be safe and effective in the management of hypothyroidism.

## CONCLUSION

The result of this case study indicates that Unani drugs *Asgand* (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) have demonstrated significant improvement in subjective & objective parameters and Zulewski's clinical scores. With Unani medicine effective tolerability and acceptability with overall improvement in quality of life was attained without any reported adverse effect. Hence, it may be concluded that *Asgand* (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) in combination can be used safely and effectively in the management of hypothyroidism. The discovery of safe and effective thyroid stimulating drugs explore a new area of active research. Extensively designed clinical trials on larger sample size are required to produce novel therapeutic option for successful management of hypothyroidism through Unani drugs.

**Conflict of Interest:** The authors declared that there was no conflict of interest.

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