



**CLINICAL EVALUATION OF PATHYAADI KWATHA (YOGRATNAKAR)
ALONG WITH SHIGRU CHURNA IN THE MANAGEMENT OF
DHATVAGNIMAANDYA W.S.R. TO HYPOTHYROIDISM**

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ABSTRACT

Hypothyroidism is a condition in which the thyroid gland does not produce a sufficient amount of the thyroid hormones thyroxine (T4) and triiodothyronine (T3). Thyroid hormone regulates metabolism—the way the body uses energy—and affects nearly every organ in the body. Without enough thyroid hormone, many of the body's functions slow down. Mood disturbances ,easy fatigability ,tiredness , lethargyness ,weight gain , slowness of memory ,intellect and thoughts, dry and coarse skin ,menstrual irregularities ,constipation and generalized swelling are major clinical features of hypothyroidism. According to the principles of Ayurveda, we find that it is basically caused due to dysfunctioning of the Agni. Hypofunctioning of Jatharagni, which in turn, affects Dhatvagni, eventually, brings out pathological sequence & ultimately, the diseased condition is developed. Looking into its Doshika dominance, Kapha associated Pitta Dushti with vitiation of Vayu due to Margavarana and predominantly, Rasavaha , Annavaha and Medovaha Srotodushti can be considered as cause of the disease.

Key words : hypothyroidism , *Jatharagni* , *Dhatvagni* , *Srotodushti*.

INTRODUCTION

Among the endocrine disorders, thyroid diseases are the most common disorders worldwide. India too, is no exception. As per the various studies, it has been estimated that about 42 million people in India suffer from thyroid diseases.

With rapid economic development and increasing westernization of lifestyle in the past few decades, prevalence of life style disorders has reached alarming proportions among Indians in recent years¹. Due to modernization, people are addicted towards irregular food habits and sedentary life style leading to increase incidences of metabolic disorders. Also stress and strain of day to day life affects the body through various psycho-somatic mechanisms. As Ayurveda is recognized as foremost life science and describes ways to prevent and manage lifestyle disorders, the world is being attracted towards its potential.

As per ayurveda, the three main causes of *vyadhis* are—

1. Inappropriate association of the sense organs with sense objects (*Asatmyendriyarth samyog*) i.e. smoking, alcohol, drug addiction.
2. *Pragyaaparadha* --- doing wrong things for ex. eating too much of a wrong food, although you know it is not good for you
3. *Kaal*

The treatment focus in ayurveda for metabolic disorders are-

1. Correction of the metabolic fire in the affected tissues.
2. Detoxification of the accumulated toxins.
3. Prevent the formation of Ama---maintain balanced metabolism.

Ayurveda is the life science and it is the correct choice for metabolic disorders. *Ayurveda* explains metabolic disorders as *agnivaishamya*. This condition occurs due to vitiation of digestive fire, this can happen due to doshic imbalance a condition occurs

due to blockage in individual channels of metabolism.

Hypothyroidism is a condition in which the thyroid gland does not produce a sufficient amount of the thyroid hormones thyroxine (T4) and triiodothyronine (T3). Thyroid hormone regulates metabolism—the way the body uses energy—and affects nearly every organ in the body. Without enough thyroid hormone, many of the body's functions slow down. Mood disturbances, easy fatigability, tiredness, lethargy, weight gain, slowness of memory, intellect and thoughts, dry and coarse skin, menstrual irregularities, constipation and generalized swelling are major clinical features of hypothyroidism.

Hypothyroidism is a chronic disorder affecting the quality of life. Even though patient is on thyroxine sodium where thyroid profile is under control, the subclinical features are also there. In spite of being treated, quality of life of the patients is hampered. Routine activities of the patients are affected. Patients of hypothyroidism often complain of joint pain as in rheumatoid arthritis, thereby affecting the routine activities so the features of hypothyroidism still persists due to *DHATUVAISHAMYA* in spite of being treated. Looking the pathogenesis and complications of hypothyroidism, it requires a systemic and radical therapy for which Ayurveda may provide a ray of hope to treat and cure hypothyroidism. Allopathic treatment although normalizes the serological thyroid profile but does not improve the quality of life i.e. fails to achieve *DHAATUSAAMYA*. There is need to achieve *DHAATUSAAMYA*.

In spite of many advances, the modern management of Hypothyroidism still remains unsatisfactory, as all the drugs used in this condition are well known for their side effects a need arises to search a safer drug with similar efficacy

So there is need to search out safe, and effective herbal drugs to treat and cure hypothyroidism . Looking the pathogenesis and complications of hypothyroidism, it requires a systemic and radical therapy for which Ayurveda may provide a ray of hope. Pathogenesis and symptomatology of hypothyroidism is similar to that of **DHAATVAGNIMAANDYA**, **SHOTHA** and **STHOLYA**. When we go through the classical text, we see that all these three disorders arises due to *agnimaandya* and *srotoavarodha*. If we try to have a keen insight to the pathogenesis of hypothyroidism according to the principles of *Ayurveda*, we find that it is basically caused due to dysfunctioning of the *Agni*. Hypofunctioning of *Jatharagni*, i.e *Agnimandya* which in turn, affects *Dhatvagni*, leading to *Dhatvagnimandya* eventually, brings out pathological sequence & ultimately, the diseased condition is developed. Looking into its *Doshika* dominance, *Kapha* associated *Pitta* Dushti with vitiation of *Vayu* due to *Margavarana* and predominantly, *Rasavaha* , *Annavaha* and *Medovaha* *Srotodushti* can be considered as cause of the disease².

Chikitsa is **SAMPRAAPTI VIGHATTAN**.

Chikitsa of *Dhatvagnimandya* includes **LANGHAN**, **DEEPAN**, **PAACHANA**, **AGNIVARDHAKA**,

KAPHAVATASHAAMKA, **SHOTHAHARA** **STHOLYAHARA** and **RASAYANA**.

All the drugs/herbs mentioned in the **pathyaadikwatha**³ taken from *yogratnaakara* (*Shotha Chikitsa Prakarana Uttrardha*) are having *Deepana*, *Paachana*, *Shothahara*, *Stholyahara*, *Rasaayana*, *Ushna*, *Tikshana*, *Katutiktarasa*, *Agnivardhaka*, *Lekhana* and *Vatakaphashaamka* Properties. All the herbs mentioned in this formulation are breaking the Pathogenesis of *Dhatvagnimandya* .

AIMS & OBJECTIVES

1. To study the concept of Hypothyroidism in Ayurveda and Modern science.

2. To evaluate and compare the efficacy of **Pathyadi kwatha** along with **Shigru churna** in the management of hypothyroidism.

MATERIALS & METHODS

Patients diagnosed with abnormal thyroid profile fulfilling the diagnostic criteria were selected for the present study from O.P.D. and I.P.D. of A and U Tibbia College and Hospital, Delhi irrespective of sex ,caste ,race ,religion and were randomly divided into two groups .All the selected patients after the registration with necessary information and taking the informed consent were studied.

STUDY DESIGN

It is a prospective, randomized type of clinical trial .

Study type--- Interventional

Purpose --- Treatment

Masking --- Open label

Number of groups- There were two groups

Group A-Freshly diagnosed (serum TSH level up to 10mIU/L) patients were given **Pathyaadi kwaatha**.

Group B- Freshly diagnosed (serum TSH level up to 10mIU/L) patints were given **Pathyaadi kwatha** along with **Shigruchurna (Stem Bark)**.

{Freshly diagnosed cases---Those who have been first time investigated for thyroid profile and found their TSH level raised up to 10mIU/L or those who were diagnosed earlier (2 months back) but not started the allopathic or the conventional treatment yet.}

Sample size: There were total 60 patients (30 patients divided in each group).

Duration of study : 3 months.

Source of Drug

The drugs were provided by the institute itself through proper channel and **certified from the institutional lab**.

DIAGNOSTIC CRITERIA

The patients were diagnosed on the basis of signs and symptoms as described for hypothyroidism in modern text and standard scientific grounds involving symptomatology, Laboratory investigations and clinical conformation

INCLUSION CRITERIA

- 1.Age between 16- 60 years (including both sexes)
- 2.Patients fulfilling the diagnostic criterias of Hypothyroidism.
- 3.Newly diagnosed cases(already described)
- 4.On the basis of raised serum TSH (up to 10mIU/L) and decreased serum T4 and T3 levels.
- 5.Patient able to participate in the study and ready to follow the instructions and sign the consent form for the 3 months

EXCLUSION CRITERIA

- 1.Age below 16 yrs. and above 60 years.
- 2.Pregnant and lactating mothers.
- 3.All complicated cases of hypothyroidism or associated with other endocrine disorders like Euthyroidism, hyperthyroidism, diabetes mellitus.
- 4.Patients associated with any other systemic diseases, like Neuromuscular disorders, any cardiovascular disorder , Hepatic disorders ,autoimmune disorders and renal disorders.
- 5.Patient who is suffering from hypothyroidism for more than 10 yrs.

- 6.Patient taking antibiotic therapy for any systemic illness within 2 months.
- 7.Patient who fail to give consent.
- 8.H/O hypersensitivity of any trial drug.

WITHDRAWL CRITERIA

- 1.Failure to consume less than 70% of drugs.
- 2.Failure to come for follow up
- 3.Any adverse drug reaction of the therapy developing in the subject.
- 4.If thyroid level is getting further raised with the trial drug.

The patients were called for regular follow-up at an interval of two weeks to evaluate their clinical status and to observe the effects or adverse effect of the treatment. Various subjective and objective parameters were assessed and their gradations were recorded. An identical assessment schedule was adopted for the patient of both the groups. Final assessment was done on the basis of symptomatic improvement and improvement in the values of laboratory investigations.

Criteria for Assessment

A special Proforma was prepared by incorporating the subjective and objective parameters of hypothyroidism and special scoring pattern was adopted for them. Following score pattern was adopted for the assesment which is as follows:

| Grade | Score |
|----------|-------|
| Absent | 0 |
| Mild | 1 |
| Moderate | 2 |
| Severe | 3 |

Subjective criteria

1. *Shotha* (Generalized swelling)

| | |
|---|---|
| No swelling. | 0 |
| Swelling on lower/upper extremities. | 1 |
| Swelling on both upper and lower extremities. | 2 |

| | |
|------------------------------|---|
| Swelling all over the body . | 3 |
|------------------------------|---|

2. Angamarda (Generalized pain)

| | |
|----------------------------------|---|
| Absent | 0 |
| Present after heavy exertion | 1 |
| Present even after mild exertion | 2 |
| Unable to do daily routine work | 3 |

3.Shrama (Fatigability)

| | |
|--|---|
| No fatigue | 0 |
| Exertional fatigue | 1 |
| Fatigue increases with exertion thereby hampering the routine work | 2 |
| Unable to perform routine work | 3 |

4.Stambha (Muscle stiffness)

| | |
|------------------------|---|
| Not present | 0 |
| Once in a weak | 1 |
| Twice or thrice a weak | 2 |
| Continuously present | 3 |

5.Gatraparushyameva (Dry and coarse Skin)

| | |
|---|---|
| No dryness | 0 |
| Dryness after bath only | 1 |
| Dryness over all body but relieved by oil application | 2 |
| Dryness not even relieved by oil application | 3 |

6.Vibandha (Constipation)

| | |
|--|---|
| Normal bowel habit | 0 |
| Passes stools daily but with slight difficulty | 1 |
| Passes hard stools on alternate days. | 2 |
| Patient needs some laxative to pass stool | 3 |

7. Artava vikruti (Menstrual abnormalities)

| DURATION | INTERVAL | FLOW | PAIN | SMELL | CLOTS | GRADE |
|--|-----------|------|------|-------|-------|-------|
| 3-4days | 26-30days | | | | | |
| Normal menstrual cycle | | | | | | 0 |
| Amenorrhoea present | | | | | | 1 |
| Menorrhagia present occasionally present with pain. | | | | | | 2 |
| Menorrhagia present frequently hampers day to day work | | | | | | 3 |

8. Sheet ashatva (Cold Intolerance)

| | |
|---|---|
| Absent | 0 |
| Cold intolerance especially with environmental changes | 1 |
| Cold intolerance present inspite of clothing ,avoids cold climate | 2 |
| Susceptible to even minute temperature fluctuations | 3 |

9. Weight

- Weight was carried out before and after treatment and change was noted.
- Body Mass Index (BMI) was also studied before and after treatment .

OBJECTIVE PARAMETERS

Biochemical investigations

1. Tri- idothyronine (T3)
2. Thyroxin (T4)
3. TSH

The assessment of the objective parameters of patients was done on the basis of laboratory investigations done before and after the completion of clinical study.

Routine Investigations

Following investigations were performed in all the registered patients of study:-

Hb, TLC, DLC, ESR, L.F.T., K.F.T., Lipid profile, Blood Sugar, Thyroid Profile (Sr. T₃, Sr .T₄, Sr. TSH) ,Anti—TPO (Thyropoxidase) , RA factor ,CRP , ASO titre.

Urine: – Routine and Microscopic Examination.

Statistical Analysis

The data of the therapeutic assessments were analysed statistically in the terms of percentage (%), mean score (x), standard deviation (SD) and paired t test.

The results were interpreted at p <0.05, p<0.01 and p <0.001 significance levels.

Non-significant : P>0.05

Significant : P<0.05

Highly significant : P<0.01, P<0.001, P<0.0001

SELECTION OF DRUG FOR THE PRESENT STUDY/HYPOTHESIS OF DRUG.

For the present study, drugs were selected with the help of textural reference of **Yogratnakara uttrardha Shotha Chikitsa prakarana PATHYAADI KWATHA** (Page no 128)

QUALITY STANDARDIZATION

The raw drugs for the proposed preparation were provided from the institute itself (Ayurvedic and Unani Tibbia College, Karol Bagh) through proper channel and certified from the institutional lab.

Method of Preparation of Pathyadi Kwatha⁴

Pathyaadi Kwatha was prepared with the following ingredients in the ratio given below:-

All the drugs were cleaned and dried. They were coarsely powdered (Yavakuta), weighed

| Drugs | Latin Name | Part Used | Part |
|-------------|-----------------------|-----------|----------|
| Haritaki | Terminalia Chebula | Fruit | One Part |
| Guduchi | Tinospora Cordifolia | Stembark | One Part |
| Bharangi | Clerodendrum Serratum | Root Bark | One Part |
| Punarnana | Boerhavia Diffusa | Panchang | One Part |
| Chitraka | Plumbago Zeylanica | Root Bark | One Part |
| Devdaru | Cedrus Deodara | Stem Bark | One Part |
| Haridra | Curcuma Longa | Rhizome | One Part |
| Daruharidra | Berberis aristata | Root Bark | One Part |
| Shunthi | Zingiber Officianle | Rhizome | One Part |

(20gms) as per formula, and then mixed well. Then they were boiled in 16 times water (320 ml) and reduced to 1/4th (80ml). Then it was filtered.

Dose : 40 ml twice a day orally before lunch and dinner.

2.) SHIGRU CHURNA

Method of Preparation

Shigru Stem Bark cleaned and dried properly. Then finely powdered and sieved through 60 no.

Dose : 1 Karsha (Tola) or 12 gms orally in two divided doses with plain luke warm water.

OBSERVATIONS AND RESULTS

Age Young and Middle aged group patients were more prone to the disease i.e 66.25 %

Sex Females were more affected (93.33%) than male (6.67%).

Habitat Majority of the patients enrolled belonged to urban areas i.e. (73%).

Marital status Majority of the patients of study were married i.e. (86.67%) .

Education Majority of the patients were educated i.e (56.66 %).

Religion Majority of the patients were Hindu i.e (53.33%).

Occupation Maximum patients enrolled for the study were housewife i.e. (61.67%)

followed by 23% of service class.

Food habits 40% patients were vegetarian and 60 % were on mixed diet.

Bowel habits Most of the patients had constipated bowel i.e (65%) .

Economic status Majority of the patients enrolled belonged to lower middle class of society i.e. (60%).

Family history Among the total patients, 28.33% patients had positive family history of Hypothyroidism in their 1st degree relatives.

Lifestyle 71.67% patients had sedentary lifestyle.

History of the disease - 56.67% cases were known cases while 43.33% cases were fresh cases.

Aakruti 80% patients had sthula aakruti followed by 17% cases of madhyam and 3% cases of krisha aakruti.

Status of jihva - 56.67% cases had sama jihva and 43.33% cases had nirama jihva.

Sleep pattern 46.67% cases had disturbed sleep followed by 36.67% cases having excess sleep.

Status of koshtha -- 57% cases had krura koshtha . 30% cases had madhyam koshtha followed by 13% cases of mridu koshtha.

BMI----- BMI of 65% patients was inbetween 25---30 , so were categorized as overweight. 15% cases were obese whose BMI was found to be greater than 30. 3% cases were underweight having BMI less than 18.5.

Levels of TSH --- 61.67% cases had their TSH in the range of 5.5 to 8 μ IU/ml and 38.33% cases had their TSH in the range of 8 to 10 μ IU/ml.

Prakriti ---- Maximum no. of patients were of kaphavata prakriti followed by 33% cases of kaphapitta prakriti and 13% cases of vatapitta prakriti.

Sara -- Maximum no. of patients i.e. 57% had *Avara Sara*.

Samhanana --- Maximum patients i.e. 60% had madhyam samhanana in the present study followed by 40% of avara samhanana.

Pramana -- In the present study maximum no. of patients i.e.63% were found of madhyama pramana followed by 22% of of avara and 15% of pravara pramana .

Satmya---In the present study maximum no. of cases i.e.65% had madhyama satmya followed by 22% of avara satmya and 13% cases of pravara satmya.

Sattva --- Maximum i.e. 66% of patients had Madhyama Sattva followed by 27% cases of avara sattva in the present study.

Abhyavaharana shakti and Jarana shakti --- In this study 57% patients had avara Abhyavaharana Shakti & avara Jarana Shakti.40% patients had madhyama abhyavaharana shakti and 43% patients had madhyama jarana shakti.

Status of agni -- In the present study 75% cases had mandagni followed by 17% cases of vishamagni.

Vyayamshakti -- In this study, it was found that maximum 80% patients had avara Vyayama Shakti followed by 20% cases of madhyama vyayamshakti.

Aharaja Nidana: Maximum i.e. 86.66 % of the patients were doing *Ahitashana* . 83.33% were doing *Vishamashana* and *Viruddhashana*. 70% of the patients were taking *Vishtambhi Ahara*. 68.33% patients were shown *Medyanamaatisevana*. The excessive usage of curd were found to be the etiological factor in 66.66% of the patients .

STATISTICAL ANALYSIS AND RESULTS

Table 1. : Effect of drug on Shotha (generalized swelling).

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 1.26 | 0.36 | 0.9 | 71.4 | 0.66 | 0.12 | 7.44 | <0.01 | 99% (HS) |
| G B | 30 | 1.66 | 0.33 | 1.33 | 80.1 | 0.71 | 0.13 | 10.26 | <0.01 | 99% (HS) |

Table 2 : Effect of drug on Angamarda (Generalized pain)

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 1.4 | 0.3 | 1.1 | 78.5 | 0.75 | 0.13 | 7.93 | <0.01 | 99% (HS) |
| G B | 30 | 1.66 | 0.2 | 1.46 | 87.9 | 0.68 | 0.12 | 11.78 | <0.01 | 99% (HS) |

Table 3 : Effect of drug on *Shrama* (Fatigability)

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 1.26 | 0.3 | 0.96 | 76.1 | 0.49 | 0.08 | 10.80 | <0.01 | 99% (HS) |
| G B | 30 | 1.8 | 0.3 | 1.5 | 83.3 | 0.68 | 0.12 | 12.04 | <0.01 | 99% (HS) |

Table 4 : Effect of drug on *Stambha* (Muscle stiffness)

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 2 | 0.36 | 1.63 | 82 | 0.71 | 0.13 | 12.45 | <0.01 | 99% (HS) |
| G B | 30 | 1.8 | 0.13 | 1.66 | 92.2 | 0.75 | 0.14 | 12.05 | <0.01 | 99% (HS) |

TABLE 5 : Effect of drug on Vibandha (Constipation)

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 1.7 | 0.46 | 1.23 | 72.3 | 0.62 | 0.11 | 10.79 | <0.01 | 99% (HS) |
| G B | 30 | 2.16 | 0.26 | 1.9 | 87.9 | 0.66 | 0.12 | 15.72 | <0.01 | 99% (HS) |

Table 6 : Effect of drug on Gatraparushyameva (Dry and coarse Skin)

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 1.53 | 0.33 | 1.2 | 78.4 | 0.61 | 0.11 | 10.7 | <0.01 | 99% (HS) |
| G B | 30 | 1.8 | 0.36 | 1.43 | 79.4 | 0.62 | 0.11 | 12.5 | <0.01 | 99% (HS) |

Table 7 : Effect of drug on Sheet Ashatava (Cold Intolerance)

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 1.3 | 0.33 | 0.96 | 73.8 | 0.55 | 0.10 | 9.52 | <0.01 | 99% (HS) |
| G B | 30 | 1.96 | 0.5 | 1.46 | 74.4 | 0.57 | 0.10 | 14.06 | <0.01 | 99% (HS) |

TABLE 8 : Effect of Drug on Menstrual Abnormalities.

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 1.71 | 0.33 | 1.38 | 80.7 | 0.66 | 0.12 | 11.30 | <0.01 | 99% (HS) |
| G B | 30 | 1.69 | 0.31 | 1.39 | 82.2 | 0.83 | 0.17 | 7.95 | <0.01 | 99% (HS) |

Table 9 : Effect of drug on Serum T3

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|-------|------|---------|---------|------------------|
| G A | 30 | 86.9 | 107.21 | 20.31 | 23.3 | 14.35 | 2.62 | 7.75 | <0.01 | 99% |
| G B | 30 | 82.42 | 104 | 21.58 | 26.1 | 13.36 | 2.43 | 8.84 | <0.01 | 99% |

Table 10 : Effect of drug on Serum T4

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|-------|------|---------|----------------|------------------|
| G A | 30 | 7.80 | 8.36 | 0.56 | 7.1 | 1.321 | 0.24 | 2.32 | 0.013 <0.02 | 98% |
| G B | 30 | 6.32 | 8.39 | 2.07 | 32.7 | 1.12 | 0.20 | 10.05 | <0.01 | 99% |

Table 11 : Effect of drug on Serum TSH

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 8.30 | 4.38 | 3.92 | 47.2 | 1.35 | 0.24 | 15.87 | <0.01 | 99% |
| G B | 30 | 8.99 | 4.41 | 4.58 | 50.9 | 1.15 | 0.21 | 21.68 | <0.01 | 99% |

TABLE 12 :Effect of drug on Sr. Haemoglobin

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|-------|------|---------|---------|------------------|
| G A | 30 | 11 | 12.41 | 1.41 | 12.8 | 1.20 | 0.22 | 6.41 | <0.01 | 99% |
| G B | 30 | 10.4 | 14.98 | 4.53 | 43.5 | 18.24 | 3.33 | 1.36 | =0.09 | 90% |

Table 13 : Effect of drug on Weight

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|-------|------|---------|---------|------------------|
| G A | 30 | 190.5 | 166.1 | 24.4 | 12.8 | 33.41 | 6.10 | 3.99 | <0.01 | 99% (HS) |
| G B | 30 | 191.53 | 167.03 | 24.5 | 12.7 | 32.54 | 5.94 | 4.12 | <0.01 | 99% (HS) |

Table 14 : Effect of drug on BMI

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 66 | 59.4 | 6.6 | 10 | 3.56 | 0.65 | 10.13 | <0.01 | 99% (HS) |
| G B | 30 | 61.3 | 54.47 | 6.88 | 11.2 | 4.18 | 0.76 | 9.014 | <0.01 | 99% (HS) |

Table 15 : Effect of drug on Sr. Cholesterol

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|-------|------|---------|---------|------------------|
| G A | 30 | 170.3 | 131.73 | 38.56 | 22.6 | 32.74 | 5.97 | 6.45 | <0.01 | 99% (HS) |
| G B | 30 | 169.13 | 125.86 | 43.26 | 25.5 | 37.89 | 6.91 | 6.25 | <0.01 | 99% (HS) |

Table 16 : Effect of drug on Serum TG

| Group names | Number | BT (Average) | AT (Average) | Improvement (Average) | % of Improvement | S.D | S.E | t-value | p-value | Result accept at |
|-------------|--------|--------------|--------------|-----------------------|------------------|------|------|---------|---------|------------------|
| G A | 30 | 26.34 | 23.66 | 2.68 | 10.1 | 1.62 | 0.29 | 9.01 | <0.01 | 99% (HS) |
| G B | 30 | 26.43 | 23.43 | 2.99 | 11.3 | 2.69 | 0.49 | 6.08 | <0.01 | 99% (HS) |

Group A patients receiving *Pathyadikwath* showed highly significant improvement in subjective parameters like generalized Swelling , fatigability, Muscle stiffness, Generalised pain, constipation , Dry and coarse skin, Cold intolerance & Menstrual irregularities as well as in the objective parameters i.e Sr.T3 , Sr.T4 and Sr. TSH levels.

Group B patients receiving both the trial drugs *Pathyadikwatha* and *Shigru churna* also showed statistically highly significant improvement in above mentioned symptoms as well as in objective parameters . Group B patients showed better results because of the cumulative effects of both the drugs.

DISCUSSION

All the drugs mentioned in the *Pathyadikwatha* are predominantly having *ushna, tikshna, laghu, rukshaguna, katutiktarasa, katuvipaka&ushnavirya*. Hence it exhibits *kaphavatashamaka, dipana, pachana, rochan a, lekhana, srotovishodhana, shothahar , sthol yahara* and *rasayana properties*. Therefore, *Pathyadikwatha* is effective in correcting *Jatharagnimandya, ajirna avastha Aamdosha, Srotodusti, Dhatvagnimandya, Rasa dhatudusti& uttrottara mala* and *aamrupi dhatu* and *updhatu vridhi* which are the main pathological features in hypothyroidism. *Shunthi* and *guduchi* by virtue of its *snigdha guna &*

madhuravipaka^{5,6} improves tissue nourishment and helps in production of better quality of *dhatu*. Thus *shunthi* not only corrects the *agni* but also nourishes the *dhatu*. According to *Acharaya Charaka, Haritaki, and guduchi* have *Rasayana properties*⁷. Hypothyroidism is *jirna* and *chirkarivyadhi* i.e. chronic in nature and *Rasayana dravya* are prescribed in such type of disease. They enhance the strength and vitality of the patient by correcting the *dosha-dhatu-agni-srotasvikriti* . As per *Acharya Bhavprakash daruharidra* is also having *rasayana* properties and hence it acts upon *dhatu-agni-srotas vikriti*.. The drugs like

Haritaki, Guduchi, Bharangi, Chitraka, Daruharidra, Punarnava, Haridra and *Shunthi* in *Pathyadi kwatha* are having anti-inflammatory and antioxidative properties . As per the latest researches, such drugs having anti-inflammatory and antioxidative properties are useful in preventing and treating the pathological events taking place in the Hypothyroidism and its complications.

Researches shows that drugs *Haritaki, Guduchi* and *Punarnava* are having immunomodulatory activities so useful in Hypothyroidism . *Aacharya Charaka* mentioned *Guduchi* as *medyarasayana* (Nootropic drugs—cognitive enhancers) in *Charaka Chikitsa*

*Sthana prathama adhyaya*⁸ thereby improving the HPA axis or improving the interactions among the Hypothalamus , Pituitary ,and Adrenal glands. *Shigru* is *katutikta rasa pradhaan* , *laghu* ,*ruksha* ,*teekshna* properties, *ushnavirya* ,*katu vipaka* , *kaphavatashamaka*.As per Acharya Bhavprakash *Shigru* is *Deepana* ,*Rochana* ,*Shothahara* ,*Medohara* , *Apachihara* ,*Pleehagulmahara*⁹. As per *Dhanvantri Nighantu Shigru* is *kaphashophasameerajit* , *Aamvishamedaghno*. All these properties very well acts on pathogenesis and symptomatology of Hypothyroidism as per *Ayurveda* Principles. *Shigru* is rich in iodine, appears to provide it with the nutrition and substrates required by the thyroid gland. **Iodine** is an essential component of thyroid hormones, T₃ and T₄. Iodine deficiency is one of the main causes of hypothyroidism. *Moringa Oleifera* extracts regulate thyroid hormone and can be used to treat hypothyroidism condition to normalize hormone levels¹⁰ .

CONCLUSION

In context to *Ayurveda* pathogenesis and symptomatology of Hypothyroidism can be interpreted to *Dhatvagnimandya* along with *Kapha- pitta dushti* and *vayumargavrodha*. Symptoms of Hypothyroidism are misleading as they mimic many other diseases. So much of the time is wasted in diagnosing the Hypothyroidism. Moreover its signs and symptoms appear very late when much of the disease has taken place inside the body. Incidences of hypothyroidism are more in females as compared to males . Stress is a major triggering factor in the aetiopathogenesis of hypothyroidism .

Pathyadikwatha and had shown highly significant improvement in both the subjective as well as objective parameters owing to its *ushna* , *tikshna* , *laghu* , *rukshaguna* , *katutikta rasa* , *katuvipaka*

ushnavirya ,*kaphavatashamaka* ,*dipana* ,*pachana* ,*rochana* ,*lekhana* ,*srotovishodhana* ,*shothahar* ,*stholyahara* and *rasayana* properties. Because of the chronic nature of the hypothyroidism sufficient time ,patience and stress free mind is required to cure *Ama* and *Agnimandya* at *Dhatu* level.

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