

A Review on Ayurvedic Researches on Hypothyroidism

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Abstract

The sedentary lifestyle and stress filled modern era has led to alterations in the activities of neuroendocrine system causing newer health challenges like thyroid disorder. Hypothyroidism is a commonly encountered health issue in day to day life and has continued to pose major health challenges in both developing and developed world. **Hypothyroidism** also known as underactive thyroid is a condition where the thyroid gland does not create enough thyroid hormone. Thyroid hormone regulates the way in which the body uses the energy-metabolism, and without enough of this hormone many of the body's functions slow down. In India, 42 million people are suffering from thyroid disorders; out of which hypothyroidism is most common with prevalence of 5.4%. The only modern treatment available is lifelong use of Hormonal therapy (Levothyroxine sodium). In present era, people are disguised with hormonal therapy as it makes them slave of hormones. In this direction, to evaluate the actual efficacy of different Ayurvedic treatment modalities; few works have been carried out at Institute for Post Graduate Teaching & Research in Ayurveda (IPGT&RA), Gujarat Ayurved University, Jamnagar. In current attempt, it has been planned to review all such works done on Hypothyroidism.

Keywords

Hypothyroidism, Hormonal therapy, Levothyroxine sodium



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INTRODUCTION

Hypothyroidism is one of the most common functional disorders of thyroid gland and is a very commonly encountered problem in clinical practice. It is estimated that about 42 million people suffer from thyroid disorders in India, out of which hypothyroidism is most common with prevalence of 5.4%¹. Women are 6 times more prone than men. The clinical features of hypothyroidism are nonspecific and not noticeable. So, millions of people in India are currently hypothyroidic but they don't know about it. Although, there is no definite evidence or textual reference for hypothyroidism, but on the basis of its presentation, it can be correlated with different entities. So, it is difficult to confer a single Ayurvedic term for the same. There are many systems involved in the pathogenesis of hypothyroidism. The mixed signs and symptoms of all these systems lead to a complex clinical picture of hypothyroidism. In spite of many advances, the modern management of Hypothyroidism still remains unsatisfactory. Being disguised by the unsatisfactory and non-promising Hormone replacement therapy, patients are inclined towards effective and safer remedies. Many studies have been

conducted at IPGT&RA to evaluate impact of Ayurvedic treatment modalities in hypothyroidism. In current attempt, it has been planned to review and compile all such works done in between 2001-2014. Five such works done in the institute were gathered to screen and evaluate actual impact of Ayurvedic management on this clinical entity.

METHODS

Works carried-out in IPGT&RA, Gujarat Ayurved University, Jamnagar at PG levels during 2001 – 2014.

Literature Review

Total 5 research works have been carried out during this period. Clinical studies include administration of drugs in more than 150 patients.

1. Gaurang lineswala et.al (2002): A clinical study on the role of *Vamana* and *Shamana* in the management of *Kaphaja Galaganda* w.s.r. to hypothyroidism: Comparative efficacy of *Shamana* with and without *Vamana* (therapeutic emesis) was attempted on 14 patients of hypothyroidism. **Group A:** *Vamana* followed by *Shamana* drugs (*Bhallataka Vati* and *Galagandahara Vati* in a dose of 2 gm thrice a day for 2 months with milk).

Group B: *Shamana* drugs (*Bhallataka Vati* and *Galagandahara Vati* in a dose of 2 gm thrice a day for 2 months with milk).

Shuddhi in Group A: 85.71% of the patients showed *Madhyama Shuddhi* and 14.29% patients had *Pravara Shuddhi*.

COMPARISION OF EFFECT OF THERAPIES

Table 1 A Effect on Subjective Parameters

Symptoms	% relief in Group A (VS)	% relief in Group B (S)
Puffiness of face	100%	75%
Edema	81.8%	76.5%
Constipation	86%	71%
Dry Skin	100%	80%
Lethargy	76.9%	75%
Fatigability	80.3%	66.66%
Generalized pain	75%	73%
Anorexia	100%	100%

Table 1 B Effect on Objective Parameters

Group A	Group B
Insignificant effect on biochemical parameters.	It significantly reduced serum cholesterol (10.80%) and serum TSH (83.06%) and significantly increased serum T4 (50.81%)

Table 1 C Overall effect of Therapy

Effect	Group A	Group B
Complete remission	0%	0%
Marked improvement	85.71%	71.43%
Moderate improvement	14.29%	28.57%

- Bhallataka Vati* contains *Bhallataka*, *Haritaki*, *Guda* and *Tila*. *Bhallataka* is considered best *Kaphaghna* drug. It has *Dipana*, *Pachana*, *Shothenashaka*, *Shitanashaka*, *Kapha-Vata Shamaka*,

Hridayottejaka, *Kamottejaka* and *Dhatvagnivardhaka* properties. All properties are useful in managing the signs and symptoms of hypothyroidism like anorexia, oedema, bradycardia, decreased basal metabolic rate, cold intolerance etc. *Bhallataka* is very *Ushna* drug and known for its reaction. To avoid its reaction another three drugs i.e. *Haritaki*, *Guda* and *Tila* were added to prepare *Bhallataka Vati*.

- Galagandahara Vati* was formulated on the basis of *Bhaisajya Ratnavali*, where *Kanchnar Gutika* has been specifically described for the treatment of *Galganda*. It contains *Triphala*, *Trikatu*, *Kanchnar Tvak*, *Guggulu* and *Madhu*. In *Galagandahara Vati*, there was some modification. Instead of *Triphala* and *Madhu*, Scholar had added other three drugs in this yoga viz *Chitraka*, *Devadaru* and *Jalakumbhi's Kshar*. *Chitraka* is mentioned as *Shothhara* and *Galgandhara* by *Acharya Sushruta*. *Devadaru* is also useful in *Shotha* and *Galganda*, particularly in *Kaphaja Galganda (Vangsen)*. *Vrindmadhava* and *Bhavprakash* have prescribed *Jalkumbi kshara* for *Galganda*. All the three drugs of *Trikatu* are *Ushna*, *Tikshana* and *Kapha - Vata Shamaka*. *Kanchnar* is commonly used in *Galganda Chikitsa* and is considered as *Kapha-Pitta*

Shamaka. *Guggulu* has *Laghu*, *Ruksha*, *Tikshna* and *Tridosha Shamaka* property and is a well known *Medohara* drug.

- It was interesting to note that 24.4% of the patients were untreated with modern medicine. All these patients got speedily and better relief than the patients who were previously treated with hormonal pills.
- On the basis of the observations of this study, it can be concluded that ***Bhallataka Vati* and *Galagandahara Vati* administered orally, have definite role in the treatment of hypothyroidism. To provide better and earlier relief to the patients of hypothyroidism, it is advised to administer these drugs after performing proper *Vamana Karma*.**

2. Gupta Chanchal et. al. (2003): A comparative study of *Pippali prayoga* and *Shodhana purvaka shamana chikitsa* in the management of *Dhatvagni Vikruti* (Hypothyroidism). (N=20)

Group A: *Pippali prayoga* (internal medication in the selected dose of 3-6 *pippali* / day by *Kshirapaka* method for 90 days).

Group B: *Virechana* (with *Snuhi bhavit Katuki churna*) followed by *shamana Yoga vati* (12 tabs/day) which was formed of an

aggregation of drugs mentioned in *Dipniya gana* (Ch. Su. 4).

Shuddhi in Group B: 90% patients achieved *Madhyama shuddhi*

Table 2 A Effect on Subjective Parameters

Symptoms	% relief in Group A	% relief in Group B
Puffiness of face	↓65.3%	↑70%
Constipation	56.3%	70%
Dry Skin	47%	57%
Lethargy	42.10%	58.3%
Generalized pain	57.1%	76.9%
Anorexia	54.5%	57.8%
Muscle ache	62.5%	46.6%
Menstrual disturbance	41.6%	42.8%

Table 2 B Effect on Objective Parameters

Objective parameters	Group A	Group B
S. T₃	14.14%	20.9%
S. T₄	12.65%	15.52%
S. TSH	19.16%	23.7%
S. Cholesterol	3.02%	8.55%

Table 2 C Overall effect of Therapy

Effect	Group A	Group B
Complete remission	0%	0%
Marked improvement	10%	30%
Moderate improvement	50%	60%
Mild improvement	10%	30%
No response	10%	0%

- *Pippali* is considered to show its direct effect on the symptomatology caused by *Agni vaishmaya* & *Ama* by virtue of its classical *gunas* e.g. *Deepana*, *Mridurechana*, *Yakrituttejaka*, *Medhya* and last but not least, having *Rasayana guna* as a chief property. It possesses *Srotovishodhaka* properties by virtue of *Laghu*, *Tikshnaguna* & *Katu rasa*.

- *Shamana yoga* prepared from *Dipniyagana* has predominance of *Katu – Tiktarasa, Laghu, Tikshnagunas, Katuvipaka* and *Ushnaveerya*, the compound makes a check over the vitiated *Rasa* and *Medadhatu*.

- In the present trial, *Shodhana purvaka shamana yoga* was found to be more effective than *Shamana (pippali)* therapy alone.

3. Anjali J Mali et.al. (2012): The effect of Vamanottara Virechana Karma followed by Vardhamana Pippali Rasayana in the management of hypothyroidism". (N=46)

Group A: *Vamanottara Virechana* followed by *Vardhamana Pippali Rasayana* (VVVPR) (N=16)

Group B: *Levothyroxine Sodium (HRT)* as prescribed by modern physician was kept as standard control (N=14)

Group C: *Vardhamana Pippali Rasayana (Pippali Churna)* was started from 500 mg then increased by 500 mg up to 7.5 gm, then dose was decreased by 500 mg up to 500 mg for 30 days). (VPR) (N=16)

Nature of Shuddhi achieved by Vamana: Maximum i.e., 50% of the patients achieved *Pravara Shuddhi*.

Nature of Shuddhi by Virechana (Trivritayoga²- Trikatu, Triphala, Trivritta, Danti, Chitraka, SnuhiKsheer, Gudodaka): In maximum(43.75%) patients, *Madhyama Shuddhi* was achieved.

COMPARISION OF EFFECT OF THERAPIES

Table 3A Effect on Subjective Parameters

Symptoms	% relief in Group A (VVVPR)	% relief in Group B (HRT)	% relief in Group C (VPR)
Puffiness of face & eyelids	75.86%	40%	36%
Edema	63.15%	Effective than group C	Less effective
Constipation	69.23%	Less effective than group A	35.25%
Dry Skin	67.85%	Less effective than group A	Less effective
Lethargy	84.4%	22.85%	28.26%
Fatigability	84.44%	Less effective than Group A	35.41%

Table 3B Effect on Objective parameters (TFT)

Analysis	Group A	Group B	Group C
Statistical Analysis	There is no significant difference (p >0.05) in the effect of therapies in all groups on all the parameters of thyroid function tests.		
Percentage improvement	Less effective than Group B	Group B was found more effective than Group A & C in reducing Sr. TSH and in increasing Sr.T ₃ and Sr. T ₄	Less effective than Group B

Table 3C Overall Effect of Therapy

Effect	Group A	Group B	Group C
Complete remission	0%	0	0%
Marked improvement	0%	0%	0%
Moderate improvement	40%	0%	0%
Mild Improvement	46.66%	8.33%	26.66%
No response	6.66%	91.66%	73.33%
Worsened	6.66%	6.66%	8.33%

• In the present study, *Vamanottara Virechana* followed by *Vardhamana Pippali Rasayana* was found more effective than HRT (levothyroxine) in relieving the symptoms of the disease. Although HRT provided good results in thyroid function tests than *Vamanottara Virechana* followed by *Vardhamana Pippali Rasayana*.

• *Vamanottara Virechana* followed by *Vardhamana Pippali Rasayana* could be an adjuvant to the patients of hypothyroidism having normal lab results but suffering from hypothyroid symptoms. *Vamanottara Virechana* may reduce the dose of HRT (hormone replacement therapy)

4.Roli Bansal et.al. (2013): Effect of *Vamana Karma* in the Management of Hypothyroidism. (N=30)

Group A: *Vamana* followed by placebo (*Godhumavati*- 4 tablets each of 500mg thrice a day for four weeks) (N=15)

Group B: Placebo alone (4 tablets each of 500mg thrice a day for four weeks). (N=15)

Levothyroxine sodium was not withdrawn during the study period.

Shuddhi in Group A:

Madhyama Shuddhi- 86.67%

Pravara Shuddhi- 13.33%

COMPARISION OF EFFECT OF THERAPIES

Table 4A. Effect on Subjective parameters

Symptoms	Group A	Group B
Puffiness of face & eyelids	70%	42.31%
Edema	71.88%	46.15%
Constipation	93%	33.33%
Dry skin	87%	36.36%
Lethargy	90.91%	36.36%
Fatigability	88.24%	47.06%
Muscle ache	82.14%	41.18%
Dysmenorrhea	93.75%	0%
Menstrual abnormalities	82.35%	33.33%

Table 4B Effect on Objective parameters

Objective parameters	Group A	Group B
S. T3	Significant increase	Significant increase (12.98%)
S. T4	Significant increase	Insignificant increase (3.50%)
S. TSH	Statistically insignificant decrease	Statistically insignificant decrease (36.70%)
S. Cholesterol	Significant decrease	Significant decrease (5.10%)

Table 4C Overall effect of therapy

Effect	Group A	Group B
Complete remission	0%	0
Marked improvement	46.66%	0%
Moderate improvement	40%	0%
Mild Improvement	13.33%	93.33%
No response	0%	6.66%

• In the present study, *Vamana with* HRT (levothyroxine) was found more effective than only HRT (levothyroxine) in relieving the symptoms of the disease, although HRT provided good results in thyroid function tests initially, but in chronic cases symptoms persisted even with normal thyroid profile.

5. Pratiksha Pateria et. al. (2014): A Clinical study on the role of *Vamana* & *Virechana* in the Management of

COMPARISION OF EFFECT OF THERAPIES

Table 5A Effect on Subjective Parameters:

Symptoms	% relief in Group A	% relief in Group B	% relief in Group C
Puffiness of face & eyelids	69 %	61%	Less effective than Group A & B
Edema	68%	64%	Less effective than Group A & B
Constipation	79%	72%	Less effective than Group A & B
Dry Skin	68%	71%	Less effective than Group A & B
Lethargy	Statistically highly significant	Statistically highly significant	Less effective than Group A & B
Fatigability	74%	66%	Less effective than Group A & B
Muscle ache	71%	72%	Less effective than Group A & B

Table 5B Effect on Objective parameters (TFT)

Hypothyroidism with *Punarnava-Amruta-Guggulu*. (N=45)

Group A: Classical *Vamana Karma* followed by *Punarnava-Amruta-Guggulu* (1gm TDS with Luke warm water after meals for 45 days) (N=15)

Group B: *Virechana Karma (Trivritta Yoga)* followed by *Punarnava-Amruta-Guggulu* (1gm TDS with Luke warm water after meals for 45 days) (N=15)

Group C: HRT (levothyroxine sodium) as standard control (N=15)

Shuddhi in Group A (*Vamana*): In 53.33% of the patients *Pravara Shuddhi* was achieved.

Shuddhi in Group B (*Virechana*): In maximum (50%) patients, *Madhyama Shuddhi* was achieved.

Thyroid profile	Group A	Group B	Group C
S. T3	↑ 27.63%	Group B was equally effective on TFT as group A	
S. T4	↑ 37.84%		↑ 48.91%
S. TSH	↓ 69.049%		↓ 86.36%

Table 5C Overall effect of therapy

Effect	Group A	Group B	Group C
Complete remission	0%	0%	0%
Marked improvement	0%	0%	0%
Moderate improvement	26.67%	20%	15.39%
Mild Improvement	53.33%	53.33%	0%
Unchanged	20%	26.67%	84.61%

• Though both the *Shodhana* groups provided improvement in Signs & Symptoms of Hypothyroidism than HRT (Levothyroxine) which was statistically significant. However ***Vamana* followed by *Punarnava-Amruta-Guggulu* group provided better results than *Virechana* followed by *Punarnava-Amruta-Guggulu* group.**

• *Punarnava-Amruta-Guggulu* contains *Punarnava*, *Guduchi*, *Guggulu*, *Haritaki*, *Bibhitaki*, *Amalaki*, *Danti*, *Chitrakmool*, *Pippali*, *Shunthi*, *Twak*, *Vidang*, *Trivritta*.

• *Punarnava-Amruta-guggulu* has *Katu-Tikta-Kashaya Rasa Pradhana* and *Ushna Veerya*, act as *Kaphahara* and helps to breakdown the pathology of Hypothyroidism. *Guggulu* supplements have the ability to regulate thyroid function and improve hypothyroidism.

• Guggulsterones found in *Guggulu*, have the ability to increase the output of the thyroid gland and stimulate the conversion of the T4 thyroid hormone into its more active T3 form. This can help increase metabolism and fat burn mechanism³. Moreover, *Guggulu* is traditionally believed to stimulate the menstrual cycle and the tone of the uterus.

• The common cause of hypothyroidism is autoimmunity. *Guduchi* (*Tinospora cordifolia*) has immunomodulatory effect. *Punarnava* (*Boerhaavia diffusa* Linn) is an excellent remedy for treating swelling or inflammation from all over the body.

• *Punarnava-Amruta-Guggulu* is assisted in detoxifying the overburdened kidneys and in eliminating excess fluid. This *Guggulu* formulation contains betasitosterol which is helpful in heart conditions,

inflammations, and reduces all three *Doshas*.

DISCUSSION

Deficiency of thyroid hormones is called hypothyroidism, and this can affect the function of virtually every system in the body. Autoimmunity is commonest cause of hypothyroidism in iodine sufficient areas. Poor gut health is responsible for the development of autoimmunity. As a result of this, thyroid auto-antibodies develop, which circulate in the body. This can be correlated with *Ama* from Ayurvedic point of view. Hence the food and lifestyle producing *Ama* in the body can be considered as etiological factors for the disease. Zinc, vitamins B₂, B₃, B₆, B₁₂, and the antioxidant vitamins A, C, and E are also involved in improving thyroid function⁴. Vitamin A, vitamin B₂, vitamin B₃, vitamin B₆, vitamin C, and vitamin E are needed for the synthesis of thyroxine. The B vitamins and copper are vital co-factors for tyrosine metabolism. Copper, iron, selenium and zinc are essential in the production of T₃ from T₄⁵. So, diet with low quantity of above constituents will impair thyroid function. Due to *Mandagni*, malabsorption of all these elements will take place. Exercise raises tissue sensitivity

toward the thyroid hormone and encourages its secretion from the thyroid gland. Since the BMR in Hypothyroidism patient is decreased, an underactive thyroid is generally associated with some weight gain⁶. Regular exercise not only boosts BMR⁷, burns extra calories and helps in reducing weight. According to Ayurveda also, *Vyayama* is responsible for *Agnidipti*⁸. Clinical presentation of hypothyroidism resembles with different clinical conditions like *Kaphavritta Uadana-Vata*, *Kaphavritta Samana-Vata*, *Kaphaja Pandu*, *Kaphaja Grahani*, *Bahudosha Lakshana* etc. *Samshodhana* therapy is one of the most important parts for all these clinical conditions. In hypothyroidism there is impaired anabolism and catabolism resulting in decreased nutrition and immunity⁹. The thyroid hormone increases metabolism in almost all the cells of the body¹⁰. Thyroid hormones increase the excretion of metabolic wastes from the tissues¹¹. Thus deficiency of thyroid hormones will impair excretion of waste products leading to *Malasanchaya*. All these lead to formation of free radicals, causing tissue damage. In such conditions, *Srotoshodhana* is essential which will be effectively done by *Samshodhana*.

Hypothyroidism involves *Kapha* associated *Pitta Dushti*. According to *Acharya Vagbhata*, *Vamana* therapy is known to eliminate *Kapha Dosha* associated with *Pitta*¹². Deposition of Hyaluronic acid, a type of mucopolysaccharide is one of the events in the pathogenesis of Hypothyroidism for which *Vamana Karma* can be beneficial. Occlusion of *Udana-Vayu* by *Kapha* is also correlated with Hypothyroidism. So, for treatment of occlusion of *Udana-Vayu*, upward moving therapy (*Vamana*) should be administered¹³. *Vamana* and *Virechana* drugs are quite irritant to the stomach and the intestinal mucosa respectively to cause inflammation. Due to this, the permeability of the membrane changes and those substances come out due to the changed permeability; which cannot come out in normal conditions. Due to *Margavaranajanya Samprapti* and *Kapha* dominant state with *Pitta Dushti*, to remove obstruction of *Kapha* and to regularise the movement of *Vata*, both *Urdhva (Vamana)* and *Adhoshodhana (Virechana)* prove beneficial. *Srotoshodhana, Agnidipti, Urja* can be achieved by *Virechana Karma*.

Present study revealed that various Ayurvedic *Samhodhana* treatment modalities are found to be significantly effective in hypothyroidism. *Vamana karma* is more effective in hypothyroidism in comparison to *Virechana*. All these procedures are safe as no adverse effects were reported in any of these studies. Slight improvement due to placebo drug shows the psychosomatic nature of disease. So it is important to avoid aggravating factors like stress and include compatible diet and exercises in addition to the drugs. It can be concluded that Ayurvedic treatment modalities can provide promising results in the management of hypothyroidism, if followed as per the prescribed guidelines of Ayurveda. Awareness regarding such efficacies is to be drawn among the masses so that a maximum number of sufferers can utilize the services and have the benefit of an enhanced quality of life.

CONCLUSION

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