

Evaluation of *Vardhamana pippali*, *Kanchanar guggulu* and *Lekhana basti* in the management of hypothyroidism

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Hypothyroidism is a clinical syndrome in that no satisfactory treatment is available in modern medicine even if better control of thyroid hormones through modern treatment. Ayurvedic managements were adopted to treat hypothyroidism for better result. This study was done with primary aim to treat hypothyroidism. This study evaluated the comparative effect of *Kanchanar guggulu* and *Vardhaman pippali* alone & along with *Phalatrikadi lekhana basti* regime on serum lipids and clinical symptoms in patients with hypothyroidism. In this study, 30 diagnosed patients with proven subclinical and clinical hypothyroidism were randomly assigned in two groups of 15 patients in each group. Group A was subjected to *Kanchanar guggulu* in the dose of 1 gm both time in a day and *Vardhamana pippali* for 12 weeks. Groups B was also subjected to similar therapy but there was addition of *Phalatrikadi lekhana basti* regime for 30 days. Twenty seven of 30 patients completed the study. On completion of whole regime it was observed that there was significant improvement on the S.TSH, S.T3, S.T4, total serum cholesterol and two clinical scores assessing symptoms and signs of hypothyroidism (Billewicz and Zulewski scores). Although significant result was found in both groups but more percentage relief was found in group B.

Keywords: Hypothyroidism, *Kanchanar guggulu*, *Phalatrikadi lekhana basti*, *Vardhamana pippali*

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Majorly hypothyroidism results from thyroid or supra thyroid abnormalities. Usually, it runs a chronic course along with slow and insidious onset. At times patients are accidentally diagnosed when they come to seek treatment of other related problems or accompanying other person to the doctor. Thyroid gland abnormality influences body metabolism to a great extent and it also affects functioning of other glands. It is more prominent in females with ratio of male to female being 1:6. If left untreated it may result in severe complication with progressively increased mortality. The basic aim of the treatment of hypothyroidism is to bring normalcy in thyroid hormone levels which reduces the incidence of major complications and its affection towards other glands.

Hypothyroidism may be either subclinical or overt. Subclinical hypothyroidism is characterized by a serum TSH above the upper reference limit with a normal free thyroxin (T4) level. This is only applicable when the hypothalamic-pituitary-thyroid axis is normal, and if there is no recent or ongoing

severe illness. An elevated TSH, usually more than 10 mIU/L in combination with a subnormal free T4 characterizes over hypothyroidism. The Colorado thyroid disease prevalence survey, conducted in United State of America on individuals who were not taking thyroid hormones and who were attending a health fair were tested and an upper normal TSH value of 5.0 mIU/L was used, reported a prevalence of 8.5% and 0.4% for subclinical and overt disease, respectively¹. In the British Whickham survey, serum TSH values over 10 mIU/L were found in 9.3% of women and 1.2% of men^{2, 3}. The incidence of hypothyroidism in women and man was 3.5 and 0.6 per 1000 survivors per year respectively. The risk of developing hypothyroidism in women with positive antibodies and elevated TSH was 4% per year and in those with either alone it was 2%-3% per year^{2, 3}. In the Framingham study, 5.9% of women and 2.3% of men at the age of 60 yrs and above had TSH values over than 10 mIU/L, 39% of them had subnormal T4 levels⁴.

With the changing life style of 21st century hypothyroidism is considered as one of the

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commonest diseases. Around 200 million population of the world is suffering from thyroid disorder. Presently the available treatment is orally supplementation of artificially synthesized hormone levothyroxin with main goal to normalize the elevated TSH but is not effective symptomatologically. So, there is need to search an effective management for this type of challenging disease.

In Ayurveda, there is no exact mentioning of the disease but it possibly match with descriptions of *Kaphaja shotha*, *Kaphaja galganda*, *Rasaja pradoshaja vikar*, *Atisthoola purusha*⁵. Although considering any of them the line of treatment remains same because on analysis of symptomatology of hypothyroidism, in the light of Ayurvedic principle of *Dosha & Dushya* showed in the disease there is dominance of vitiated *Kapha & Vata* and vitiation of *Rasa dhatu* is the main feature and somewhat similar pathology is viewed in above mentioned diseases.

Since, there is predominantly vitiation of *Vata & Kapha* therefore for its normalization the two treatment regime taken in consideration comprises of use of *Kanchanar guggulu* and *Vardhaman pippali* in the 1st regime, in 2nd regime an addition of *Lekhana basti* (medicated enema) was done. Both the selected regime are having Vatakaphahara (suppression and elimination of *Vata* and *Kapha doshas*) quality and are particularly effective in symptoms like weight gain, edema, anorexia, cold, intolerance, constipation, etc., found in hypothyroidism.

Methodology

Aim and objective

- 1 To treat hypothyroidism with Ayurvedic regimes.
- 2 To assess the role of *Kanchanar guggulu*, *Vardhamana pippali* and *Lekhana basti* in the management of hypothyroidism.
- 3 To assess the comparative efficacy of *Kanchanar guggulu*, *Vardhamana pippali* and *Lekhana basti* along with *Kanchanar guggulu* and *Vardhamana pippali* in the management of hypothyroidism.

Material and methods

Study design—A prospective, open labelled, randomized, preliminary study.

Source of data—Uncomplicated cases of either sex of hypothyroidism were selected randomly from the OPD & IPD of National Institute of Ayurveda, Jaipur.

Sample size—Total 30 patients were registered, among them 3 patients were dropped out and 27 patient had completed treatment schedule.

Inclusion criteria

- A) Patients between the age of 16 yrs and above 70 yrs.
- B) TSH level more than 5.0 mIU/L on 2 consecutive blood test.
- C) The patients presenting the classical signs and symptoms of the disease hypothyroidism.
- D) Patients not taking any other medicine for this disease.

Exclusion criteria

- a) Patients suffering from coronary heart disease.
- b) Patients suffering from pituitary/hypothalamic disorders, or other nonthyroidal illnesses.
- c) Patients taking any other medicine for this disease or lipid-lowering agents.
- d) Patients suffering from Diabetes mellitus.
- e) Patient with obvious or suspected poor compliance.

Management of the patients: Patient who was on levothyroxin was asked to reduce dose gradually and 15 days before commencement of study it was completely withdrawn.

Selected patients were randomly placed in two groups of 15 patients in each group.

Group A – Patient treated with *Kanchanar guggulu* in the dose of 1 gm twice a day and *Vardhamana pippali* for 12 weeks

Group B – Patient treated with *Lekhana basti* for thirty days along with *Kanchanar guggulu* in the dose of 1 gm twice a day and *Vardhamana pippali* for 12 weeks

Drugs

1. *Kanchanar guggulu*⁶

Contents

Bark of *Kanchanar* (*Bauhinia variegata* L.), powder of *Triphala* [*Amalaki* (*Embllica officinalis* Gaertn.), *Haritaki* (*Terminalia chebula* Retz. & Willd.) and *Vibhitak* (*Terminalia bellirica* Roxb.)], powder of *Pippali* (*Piper longum* L.), Bark of *Varuna* (*Crataeva religiosa* Forst.), *Dalchini* (*Cinnamomum cassia* Blume.), fruit of *Ela* (*Elettaria cardamomum* Maton.), leaf of *Tejapatra* (*Cinnamomum tamala* Nees. & Eberm.) and resin of *Suddha guggulu* (*Commiphora mukul* Hook.ex.Stocks.)

Dose – 1 gm twice a day

Anupana (~ type of drink after taking medicine) - Luke warm water.

2. Vardhamana pippali – Five *Pippali* were given on first day then it was gradually increased by 1 *Pippali* /day. On 7th day total 12 *Pippali* were given. Then, it was gradually decreased by 1 *Pippali* /day. In this way 5 *Pippali* were given on 15th day. This regime was repeated for whole trail period. *Pippali* was given in *Kalka* (paste) form with *Anupan* of milk (200ml).

3. Phalatrikadi lekhan basti

Contents of *Phalatrikadi lekhan basti*:

1. <i>Kwātha</i> (decoction) -	250 ml
2. Urine of cow -	150 ml
3. Honey -	50 gm
4. <i>Saindhava</i> (rock salt) -	10 gm
5. <i>Yavakshār</i> (ashes of <i>Yava-Triticum sativum</i> Lam.) -	10 gm
6. <i>Kalka</i> -	40 gm
7. <i>Sarshapa taila</i> (<i>Brassica campestris</i> L.) -	50 ml

Other ingredients of *Phalatrikadi lekhan basti*-

Kwātha Dravyas (drugs for decoction)

(1) *Triphala* (2) *Guduchi* (*Tinospora cordifolia* Willd.), (3) *Nimb* (*Azadirachta indica* A.Juss.), (4) *Āragvadha* (*Cassia fistula* L.), (5) *Madhanphala* (*Randia spinosa* Poir.), (6) *Vidang* (*Embelia ribes* Burm.F.), (7) *Kulathi* (*Dolichos biflorus* L.)

Kalka Dravyas (drugs for herbal paste)

(1) *Vacha* (*Acorus calamus* L.)
 (2) *Hapushā* (*Juniperus communis* L.)
 (3) *Mulethi* (*Glycyrrhiza glabra* L.)
 (4) *Pippali*

Āavap Dravyas (another drugs for mixing)—*Saindhava* (Rock salt), *Yavakshara*, Honey, *Katu* oil (*Brassica campestris* L.) and urine of cow.

Dose of Phalatrikadi lekhan basti -520 ml

Anuvasan basti -For *Anuvasan basti* – *Triphala taila* (oil) was used. Ingredients of *Triphala taila* were *Triphala* processed in *Katu taila*. *Saindhava lavana*-5g and *Shatpushpa powder* (*Anethum sowa* Kurz.) -5g was also added in oil before application of *basti* procedures.

Dose -75 ml

Days of administration –30 days in *Kala Basti Krama* (30 days schedule of enema).

Mode of administration – Before administration of *basti* patient was subjected daily to external

snehana with *Dashmool* oil for 30 minutes and *Nadi swedana* (sudation with help of rubber tube) using vapours of decoction of *Dashmoola* for 15–20 minutes on lower abdominal and lumbosacral region. Classical method of *basti* administration was used for *Niruha* and *Anuvasan basti*.

Total trial period- 12 weeks

Follow up - Patient was also followed 1 month later after completion of the treatment.

Criteria of assessment

Results obtained were adjudged on the basis of following parameters:

The degree of clinical hypothyroidism was estimated using the score developed by Billewicz⁷ (euthyroidism is indicated by a score of < or = -30 points, borderline hypothyroidism by -29 to + 24 points, and clinical hypothyroidism by > or = 25 points) and using the score developed by Zulewski *et al.*⁷ (euthyroidism is indicated by a score of 0–1 point, borderline hypothyroidism by 2–5 points, and clinical hypothyroidism by >5 points, including an age-correcting factor), as previously described⁷.

Each patient was assessed individually on the basis of signs and symptoms and on the basis of score as well as percentage reduction; patients were classified as illustrated below:

Assessment	Score %
Complete cure	100%
Marked cure	>75%
Moderate response	50 -75%
Mild improvement	25-50%
No response	<25%

Statistical analysis

All the observations were analyzed statistically in terms of mean (x), standard deviation (SD) and standard error (SE), paired t test was carried out at P < 0.05, P < 0.01 & P < 0.001 levels.

P < 0.05 - Improvement

P < 0.01 - Significant

P < 0.001 - Highly significant

Results

In this clinical work total 30 patients were included in two groups of 10 patients each. Out of them 2 patients in group A and 1 patient in group B had left the treatment. So, 27 patients were analyzed for the result. For clinical assessment, clinical scores of hypothyroidism were determined using two different

questionnaires (Billewicz and Zulewski scores) at the baseline visit and at the end of the study (Tables 1&2). Significant improvement of both questionnaires, assessing clinical signs and symptoms, was found in group A and group B. Result in clinical score was more in group B. In total serum cholesterol both group showed significant result with more improvement in group B. In Billewicz and Zulewski scores 74.4% and 49.89% relief was respectively found in group A (Table 3). 92.41% and 77.14% relief was respectively found in group B in these clinical scores (Table 4). In total serum cholesterol 14.06% and 24.51% relief was found in group A and Group B, respectively. 37.24% and 61.90% improvement was found in serum TSH, treated with group A and group B, respectively with highly significant result in both groups (Tables 3 & 4). From the study, it was observed that complete cure was not found in either therapy (Table 5). Marked relief was found in 10% of patients in group A and 30% of patients in group B. Moderate response was observed in 50% of patients on group A and 60% patients in group B. While mild improvement was seen in 30% patients in group A and 10% patients in group B. 10% of patients showed no response towards therapy in group A (Table 5).

Discussion

In the present study, maximum No. of patients (9 patients) was drawn from 31– 40 yrs age group. Eight patients were from age group of 41–50 yrs. From the sample drawn for above study, 25 females were found affected by the ailment. 22 patients, who opted for the study, were households. This high incidence might be due to their comparative sedentary

Table 1—Billewicz diagnostic index

<i>Symptoms</i>		
Diminished sweating	+6	-2
Dry skin	+3	-6
Cold in tolerance	+4	-5
Weight increase	+1	-1
Constipation	+2	-1
Hoarseness	+5	-4
Deafness	+2	0
<i>Signs</i>		
Slow movement	+11	-3
Coarse skin	+7	-7
Cold skin	+3	-2
Periorbital puffiness	+4	-6
Pulse rate	+4	-4
Ankle jerk	+15	-6

life style causing vitiation of *Agni* (~various digestive and liver functions), suppression of natural urges and house hold tensions helping in causation of physical and mental disorders. Servicemen who were in 30 % (9 patients) of occurrence may be affected due to their irregular dietary pattern and mental stress, etc. 19 patients were form urban area which can be suggestive of life full of hustles and bustles, fast and machinery schedule, irregular dietary patterns, etc. Intake of sweat and bitter foods were predominantly taken that was the factor of vitiation of *Kapha* and *Vata doshas* that in turn vitiates *Agni*.

Study of addiction reveals that most patients were found to be habitual of tea, coffee, tobacco chewing and smoking especially in rural people. Tea might cause *Mandagni* (low digestive power) and vitiate *Doshas* especially *Vata doshas*. *Mandagni* (18 patients) and *Madhyama kosta* (16 patients) were found in most patients. Both, these factors may point towards predominance of *Kapha dosha* in the occurrence of the disease. 8 patients were having irregular menstruation while 13 of patients had under

Table 2—Zulewski's clinical score for hypothyroidism

<i>Symptoms</i>			
Diminished sweating	Sweating in the warm room or hot summer day.	1	0
Dry skin	Dryness of skin, noticed spontaneously, requiring treatment.	1	0
Paraesthesia	Subjective sensation	1	0
Weight increase	Recorded weight increase, tightness of clothes	1	0
Constipation	Bowel habit, use of laxative	1	0
Hoarseness	Speaking voice, singing voice	1	0
Impairment hearing	of progressive Impairment of hearing	1	0
<i>Signs</i>			
Slow movement	Observe patient removing his clothes	1	0
Coarse skin	Examine hands, forearm, elbow for roughness and thickening of skin	1	0
Cold skin	Compare temperature of hands with examiner's	1	0
Periorbital puffiness	This should obscure the curve of the malar bone	1	0
Delayed ankle reflex	Observe the relaxation of the reflex	1	0
Sum of all symptoms and signs present		12	0

Table 3—Results of Group A

Symptoms	B.T	A.T	% Relief	S.D	S.E	t	p
Billewicz score	-08	-31.3	74.44	0.42	0.14	8.57	<0.001
Zulewski score	4.85	2.43	49.89	0.56	0.18	6.11	< 0.001
S Cholestrol (mgm%)	218.3	187.6	14.06	1.91	0.63	8.98	< 0.001
S. T3 (nmol/L)	1.67	1.59	4.79	0.33	0.11	1.36	>0.10
S. T4 (pmol/L)	11.78	12.03	2.07	1.34	0.44	2.20	<0.10
S. TSH (mIU/L)	11.6	7.28	37.24	5.90	1.96	1.93	<0.10

BT =before treatment, AT =after treatment, SD = standard deviation, SE = standard error, p = probability

Table 4—Results of Group B

Symptoms	B.T	A.T	% Relief	S.D	S.E	t	p
Billewicz score	-02.54	-33.5	92.41	0.51	0.17	9.41	<0.001
Zulewski score	5.6	1.28	77.14	0.51	0.17	8.23	<0.001
S CHOLESTEROL (mgm%)	228.8	172.7	24.51	12.75	4.25	3.95	< 0.01
S. T3 (nmol/L)	1.9	1.64	13.68	0.47	0.15	1.52	>0.10
S. T4(pmol/L)	11.34	16.05	29.34	1.12	0.47	2.70	<0.01
S. TSH(mIU/L)	12.6	4.8	61.90	5.24	1.748	2.33	<0.01

BT =before treatment, AT =after treatment, SD = standard deviation, SE = standard error, p = probability

Table 5—Overall effect of therapies

Assessment	Group A		Group B	
	No.of patients	(%)	No.of patients	(%)
Complete relief	0	0	0	0
Marked relief (75%)	1	10%	3	30%
Moderate relief (50 - 75%)	5	50%	6	60%
Mild relief (25-50%)	3	30%	1	10%
No response (<25%)	1	10%	0	-

gone menopausal condition. Data of symptomatology incorporated from the study reveals that all patients (100%) were affected by periorbital puffiness, coarse and dry skin & hair, hair fall, loss of appetite and sluggishness. Above data may give an idea about *Tridoshaj* nature of disease with predominant affection of *Kapha* and *Vata dosha*. No single factor of the above illustrated factors can be labeled as the sole cause. Hence, it is a disease in which all these factors may contribute.

According to Sushruta (an Ayurvedic scholar), hoarseness of voice is caused due to vitiation of *Vata* which can be pacified by *Vata* suppression property and *Ushna veerya* (hot potency) of the trial drugs. Periorbital puffiness is manifestation of vitiation of *Kapha Dosha* which was alleviated by *Kaphavata* suppression property, *Ushna veerya* and anti-edematous effect of trial drugs. Vitiation of *Vata* and depletion of *Rasa* are responsible for dry skin and hair which may be pacified by *Kaphavata* suppression

property and *Ushna veerya* of the selected drugs. Cold intolerance is caused by *Kapha* and *Vata* vitiation, this symptom was pacified by *Kaphavata* suppression property of formulation. Loss of appetite is seen in *Vridhi* (augmentation) of vitiated *Rasa dhatu* which again is caused by *Rasadhatvagnimandya*. Alleviation of this symptom was due to *Deepana* and *Pachana* (~ digestive) properties of drugs under trial. Relief in menstrual disturbance was due to improvement in status of vitiated *Rasa Dhatu*. Function of various *Updhatu* was also getting improved showing aforesaid relief. Tiredness is a *Medopradoshaj vikaras* (diseases of deranged fat), vitiation of *Agni* and *Rasa dhatu*. Probable mode of action of aforesaid formulations was at the level of *Agni* relieving *Dosha* and *Dushya dushti* and pacifies symptoms.

Disturbance in total serum cholesterol level is also found in Hypothyroidism. This is due to the disturbances of liver functions (*Agnivaishamy*). This disturbance in serum cholesterol level is the main causes of several cardiac complications and atherosclerosis. Improvement in total cholesterol level was due to correction of *Agni*.

Pippali has the property of *Deepan* (digestive), *Vrishya* (aphrodisiac), *Madhur Vipaka*, *Rasayan* (~rejuvenation property), *Anushna*, *Katu rasa* (bitter taste), *Snigdha* (unctuous), *Vata-shleshmahara* and *Laghu* (light in nature). *Vardhamana pippali rasayan* can be used in *Kasa* (cough), *Kshaya* (depletion of body elements), *Sosha* (emaciation), *dyspnea*,

hiccough, diseases of throat, hemorrhoids, *Grahani* disease (GIT disturbances), *Pandu* disease (anemia), *Visham jwara* (fever not having a characteristic pattern for occurrence, pyrexia of unknown origin, malaria, etc.), hoarseness of voice, *Pinas* (chronic sinusitis), edema, *Gulma* and *Vatabalask*⁸. Many of these symptoms are found in hypothyroidism disorders. *Vardhamana pippali rasayan* treats this condition by correction of *Agni*, purification of micro channels due to its *Vatakaphahar* property and by increasing supply and assimilation of micronutrients to tissues.

Kanchanar guggulu is indicated in tumors, disorders of lymphatic channels, cyst, wounds, *Gulma*, skin disorders and fistula⁹. Ingredients of *Kanchanar guggulu* have the effect of *Deepan* and purification of micro channels. In this way it treated hypothyroidism.

Shodhan (purification) therapy proved more effective in these symptom with more relief in group B followed by in group A. Looking at the better symptomatological improvement status in Group B, it was concluded that *Basti* therapy provided better results. According to Charak (an Ayurvedic scholar), Purification helps in relieving signs and symptoms like *Aruchi* (anorexia), *Sthaulya* (obesity), *Pandu* (anaemia), and etc.¹⁰. Among various signs and symptoms described by him to get alleviated by this therapy, some of them are found in this disease too. Moreover, it has been stated that, this process elevates *Agni*, alleviates diseases, normalizes functions of *Indriyas* (different sense organs), *Mana* (mind), *Buddhi*, etc., and increase strength and vitality. A better results in Group B was due to *Lekhan basti* therapy which is a well known therapy to remove *Srotorodha* (blockage of channels) and clearing *Srotasas* (purification of micro channels). Once the channels through which *Asthayi dhatus* (~ various nutritious elements) is transported, become clear, *Dhatus* can go uninterrupted to their target point. Also, *Agnimandya* improved by *Deepana* and *Pachana* properties of drugs showed improvement in *Dosha* and *Dushya dusti* (~ correction of pathology). Thus, combined effect on both pathological events may help in relieving diseased condition. No major hazardous side effects were noticed during treatment period. After intake of *Pippali*, 3 patients complained of hyperacidity which regressed after increasing milk intake during drug ingestion. After follow up it was found that improvement gained during treatment period was remained constant.

Conclusion

Significant improvement on all the parameters was found in group A and group B with more % relieve in group B. In the present trial, *Lekhana basti* associated with *Vardhaman pippali* and *Kanchanar guggulu* was found more effective than *Vardhaman pippali* and *Kanchanar guggulu* therapy alone. Being a multipurpose therapy, *Basti* eliminates vitiated *Vata*, *Pitta* and *Kapha* from the body. It may help in decreasing *Dravta* (liquidity) of *Pitta* and *Guruta* (heaviness) of *Kapha*. Hence, *Prithvi* and *Apya bhutas* may get decreased with eventual elevation of *Agneya tatva*. In this way it may help in potentiating *Agni*. This regime was effective in the management of hypothyroidism.

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