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## **A comparative clinical study on the efficacy of Vamana Karma (therapeutic emesis) and Virechana Karma (therapeutic purgation) procedures along with Shamana (palliative) therapy for the management of hypothyroidism**

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**Abstract**---Introduction: Hypothyroidism is a common endocrine disorder characterized by an underactive thyroid gland, leading to decreased production of thyroid hormones. In Ayurveda, hypothyroidism is often compared to the condition of decreased metabolic activity (~*Dhatwagni-mandya*) at the tissue level. A holistic Ayurvedic approach that includes Panchkarma (Bio purification and detoxification procedures) can be highly beneficial in the treatment of hypothyroidism. Aim: To evaluate the efficacy of Shodhana (Bio-purification) along with Shamana (Palliative) interventions in the

management of hypothyroidism. **Materials and Methods:** Total 101 patients of hypothyroidism were randomly grouped into three. Patients registered in Group A (n=33) were treated with Vamana Karma along with Shaman Chikitsa, Group B treated with Virechana Karma along with Shaman Chikitsa and in group C treated with Shamana Chikitsa for 45 days. **Results:** Significant improvement found in thyroid profile with treatment in group A and BMI was significantly decreased in all three groups. **Conclusion:** *Vamana* followed by *Shamana* therapy was found more effective than other groups in thyroid function tests.

**Keywords**--Hypothyroidism, Dhatvagni-mandya, Vamana Karma, Virechana Karma, Shmana Chikitsa.

## Introduction

Hypothyroidism refers to the insufficient production of thyroid hormone by the thyroid gland, which can be caused by various factors such as hypothalamic or pituitary diseases, tissue resistance to thyroid hormone, or direct disorders affecting the thyroid gland itself.[1] It is considered one of the most common endocrine disorders globally, including in India. Studies project that in India, approximately 42 million individuals are affected by thyroid disorders, with a prevalence of 5.4% specifically for hypothyroidism.[2] Females are more commonly affected, with a male to female ratio of 1:6.[3] Notably, India has a relatively high prevalence of hypothyroidism, with approximately one in ten individuals being affected. Research indicates that the prevalence of hypothyroidism is highest in the age group of 46 to 54 years (13.11%) and lowest among those aged 18 to 35 years (7.53%).[4]

In Ayurveda, there are similarities between the clinical symptoms of hypothyroidism and the concept of Dhatvagni Mandya (impaired metabolism), which can be considered as a *Pitta Dusti*. Most of the symptoms of hypothyroidism show *Kapha* dominance. Glycosaminoglycans deposition in the tissues can be considered as *Kapha Vargiya Dravya* which will cause obstruction in the channels and hence obstruction to the proper movement of *Vayu* producing *Margavaranajanya Vata Prakopa*. Hence, the disease is *Tridoshaja* (involvement of 3 Doshas in disease pathogenesis) in nature.

When examining the doshic dominance of hypothyroidism, the vitiation of *Vata* due to *Margavarana* (obstruction in the channels) and primarily affecting the *Annavaha* (~digestive), *Rasavaha* (~circulatory), and *Medovaha* (~fat tissue) *Srotas* (~channels) can be considered as contributing factors to the disease. According to *Vagbhata*, *Vamana* is indicated in the disorder of *Kapha* alone and in the association of *Kapha-Pitta* and *Kapha-Vata*. Thus *Vamana Karma*, Apart from *Kapha* it also eliminates the vitiated *Pitta* and regulates the movement of *Vata*. [5] *Virechana Karma* is the best therapy for the *Pitta*, *Pitta* associated with *Kapha* or *Vata Dusti* and for *Dosha* situated in *Pittasthana*. [6] Hence *Samshodhana* therapy could be an adjuvant to the patients of hypothyroidism having normal laboratory

results but suffering from symptoms. After *Shodhana* for the treatment of Hypothyroidism a drug should be used which follows these principles:

- Regulating the digestion and elimination
- Regulating the Basic metabolic rate
- Regulate the functioning of Thyroid gland, Liver

Considering these principles in this study ***Panchkoala churna [7], Kaishor Guggulu [8], Punarnavadi kvatha [9] were selected as Shamana Drugs in all groups.*** Considering all the above factors *Vamana* and *Virechana Karma* along with *Shamana* therapy was selected for the present study for treatment of hypothyroidism on various scientific parameters to evolve a safe, effective, readily available and economic treatment protocol.

### **Aims and Objectives**

1. To evaluate the efficacy of *Vamana karma* and *Virechana Karma* in the management of hypothyroidism, comparatively.
2. To evaluate the efficacy of *Shamana* therapy in the management of hypothyroidism.

### **Materials and Methods**

The study was designed as an open-label interventional trail involving a total of 101 patients of diagnosed with hypothyroidism who met the predefined inclusion criteria. The participants were randomly allocated to three distinct groups. Prior to treatment initiation, each patients underwent a comprehensive examination, and relevant pathological and biochemical investigations were conducted. Inform consent was obtained from all participants prior to their inclusion in the trail. (Chart 1) The study was started after obtaining permission from Institutional Ethics Committee (PGT/7-A/Ethics/2013-2014/2753, dated 09/12/2013) and was registered in Clinical Trail Registry of India (CTRI/2015/07/006060, dated 31/07/2015).

### **Wash out period**

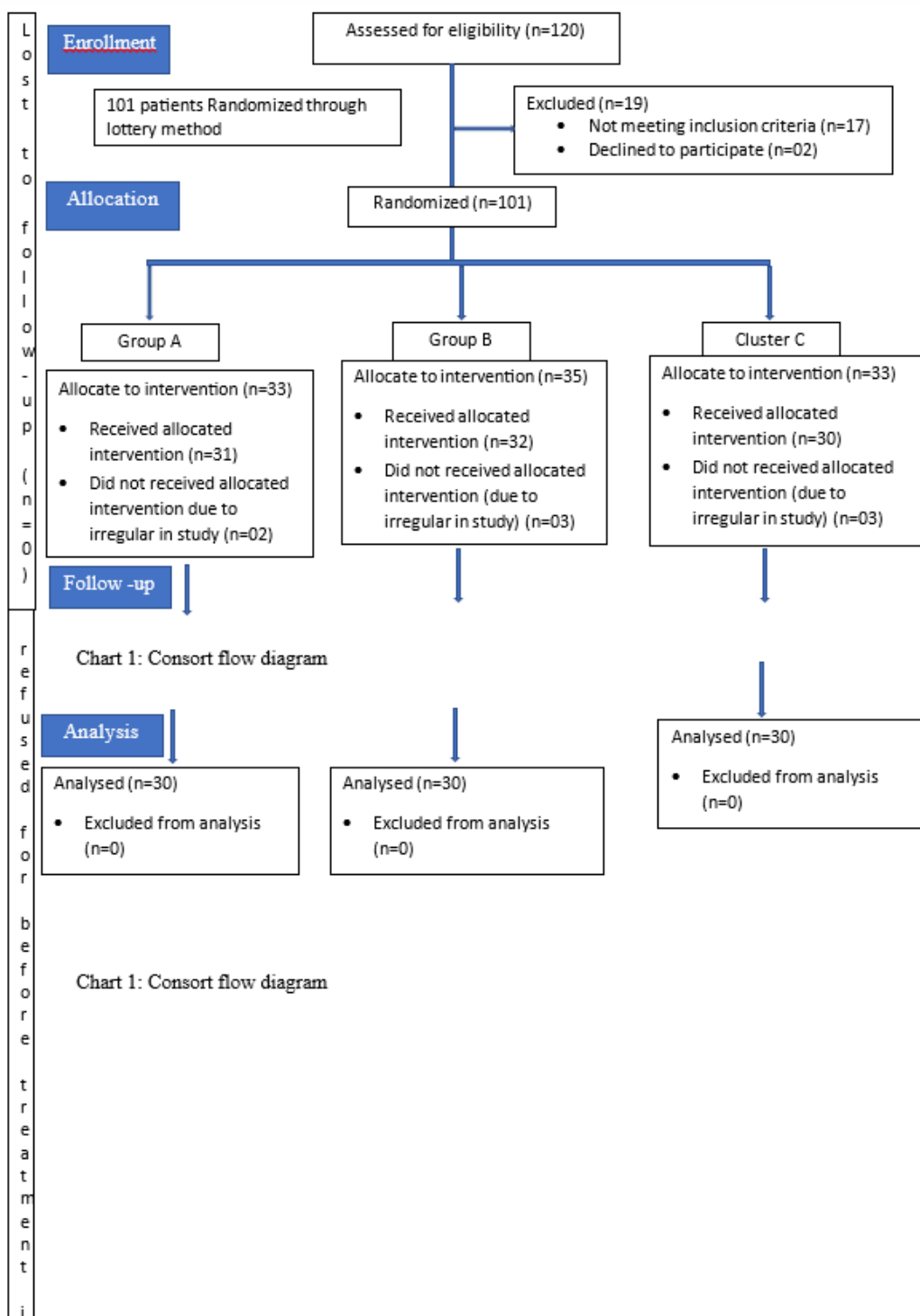
If patients were taking HRT for the treatment of Hypothyroidism, those were kept on wash out period at 21 days before included in clinical study.

### **Inclusion criteria**

- Diagnosed cases of hypothyroidism based on the following criteria:
  - The patient's Sr. TSH level is above 4.5 mIU/L (Normal Value = 0.5 to 4.5 mIU/L).
  - The total Sr. T4 level is below the normal range (Total Sr. T4 = 4.5 to 12.5 ng/dl).
  - The total Sr. T3 level is below the normal range (Total Sr. T3 = 80 to 220 ng/dl).
- Patients having clinical features of hypothyroidism.
- Age 18-60 years.
- *Vamana Yoga* & *Virechana Yoga* (Patients fit for *Vamana* and *Virechana*)

**Exclusion criteria**

- Patients with Ischemic heart diseases, a history of myocardial infarction, a cerebrovascular event, uncontrolled hypertension, cardiac arrhythmias, pregnancy, or active malignant diseases were excluded from the study.



## Grouping and Posology

### GROUP A:

*Vamana Karma* followed by *Shamana Chikitsa* (*Panchkola Churna*, *Kaishor Guggulu*, *Punarnavadi Kwataha*)

Table 1: Method of drug administration in group A

No.	Procedure	Drug and Dose	Duration
1.	<i>Deepana, Pachana</i>	<i>Panchkola Churna</i> 3gm twice a day with Luke warm water	3-7 days
2.	<i>Snehapana</i>	<i>Ghrita</i> (as per <i>Koshtha</i> and <i>Agni</i> )	3-7 days
3.	<i>Abhyanga and Swedana</i>	<i>Bala Taila</i> ) - 1 time a day	1 day
4.	<i>Vamana Karma</i>	<ul style="list-style-type: none"> <li>• Milk(1-2 lit)</li> <li>• <i>Madanaphala pippali Churna</i> (<i>Randia dumatorum</i>) - 6-10 gms</li> <li>• <i>Vacha</i> (<i>Acorus calamus</i>) - 2-5 gms</li> <li>• Rock salt - 5-10 gms</li> <li>• Honey - 30-50ml</li> <li>• <i>Yashtimadhu Phant</i> (<i>Glycerrhiza glabra</i>) - 2-3 Litre</li> </ul>	1 day
5.	<i>Samsarjana Krama</i>	Diet (As per <i>Shuddhi</i> )	3-7 days
6.	<i>Shamana yoga</i> (After completion of <i>Samsarjana Krama</i> )	<i>Panchkola Churna</i> 3gm twice a day with luke warm water after food, <i>Kaishor Guggulu</i> 1 gm twice a day with luke warm water <i>Punarnavadi Kwatha</i> twice a day 25ml before food	45 days

### GROUP B:

*Virechana Karma* followed by *Shamana Chikitsa* (*Panchkola Churna*, *Kaishor Guggulu*, *Punarnavadi Kwataha*)

Table 2: Method of drug administration in group B

No.	Procedure	Drug & Dose	Duration
1.	<i>Deepana, Pachana</i>	<i>Panchkola Churna</i> 3gms twice a day with luke warm water	3-7 days
2.	<i>Snehapana</i>	<i>Ghrita</i> (as per <i>Koshtha</i> and <i>Agni</i> )	3-7 days
3.	<i>Abhyanga &amp; Swedana</i>	<i>Bala Taila</i> – 1 time a day	3 days
4.	<i>Abhyanga, Swedana, Virechana Karma</i>	<i>Trivrit Leha</i> 50-100 gm (as per <i>Koshtha</i> )	1 day
5.	<i>Samsarjana Krama</i>	Diet (As per <i>Shuddhi</i> )	3-7 days
6.	<i>Shamana yoga</i> (After completion of <i>Samsarjana Krama</i> )	<i>Panchkola Churna</i> 3gm twice a day with luke warm water after food, <i>Kaishor Guggulu</i> 1 gm twice a day with luke warm water <i>Punarnavadi Kwatha</i> 25ml twice a day before food	45 days

**GROUP C:**

*Shamana Chikitsa* was given in this group. *Panchkola Churna* 3gm twice a day with luke warm water after food, *Kaishor Guggulu* 1 gm twice a day with luke warm water and *Punarnavadi Kwatha* 25ml twice a day was administered before food for 45 days in the patients of Hypothyroidism.

**Criteria for assessment**

Serum level of thyroid-stimulating hormone (Sr. TSH), triiodothyronine (Sr. T<sub>3</sub>) and thyroxine (Sr. T<sub>4</sub>), as well as body mass index (BMI), were evaluated before and after the completion of treatment. BMI was determined by dividing weight (in kilograms) by the square of height (in meters).

**Observation**

In the present study, maximum no. of patients i.e., 40.59% were belonging to the age group of 31-40 years followed by 25.74% were belonging to the age group of 18-30 years, 92.07% were females, 90.09% patients were hindus and 95.00% patients were married. 28.71% patients were educated up to secondary. 83.16% patients were housewives, 66.33% patients were belonging to middle class.

**Results**

In the present clinical study, in group A, increase in S.T<sub>3</sub>, S.T<sub>4</sub> was 4.16%, 20.00% respectively which was statistically insignificant and very significant respectively while Sr. TSH was decreased by 50.76% which was statistically significant, while in group B increase in S.T<sub>3</sub>, S.T<sub>4</sub> was 1.08% and 13.32 which was statistically insignificant and significant respectively and S.TSH was also increased by 13.26% which was statistically non-significant and group C decrease in S.T<sub>3</sub>, S.T<sub>4</sub>, was observed with 7.88% and 5.73 which was statistically significant and insignificant respectively and S. TSH was increased by 50.10%. On comparing the effect of therapies, it shows that, Group A was found effective in decreasing S.TSH & increasing S.T<sub>3</sub>, S.T<sub>4</sub> than Group B and group C had not shown positive effect in improving thyroid function test. (Table 3 to 5)

In Group A, BMI were decreased by 4.58% which were statistically highly significant. In Group B, BMI were decreased by 7.23% which was statistically highly significant. In Group C, BMI were decreased by 1.86% which was statistically highly significant. On comparing found that, Group B was more effective in reducing weight and BMI than group A and C. (Table 6)

Table 3- Effect of therapies on Sr. TSH in all groups by using Paired 't' Test

Gr.	Sr. TSH Mean Value (mg/dL)		Diff.	%	Paired 't' test				Significance
	BT	AT			S.D.	S.E.	t'	P	
A	20.576	10.131	10.444	50.76↓	25.403	4.638	2.252	0.032	S
B	43.350	49.099	-5.749	13.26↑	66.322	12.109	0.4748	0.385	NS
C	20.271	30.428	-10.157	50.10↑	40.966	7.479	1.358	0.184	NS

Table 4- Effect of therapies on Sr. T3 in all groups by using Paired 't' Test

Gr.	Sr. T <sub>3</sub> Mean Value (mg/dL)		Diff.	%	Paired 't' test				Significance
	BT	AT			S.D.	S.E.	t'	P	
A	1.142	1.195	-0.052	4.16↑	0.278	0.051	1.039	0.307	NS
B	1.341	1.355	-0.015	1.08↑	0.327	0.059	0.245	0.808	NS
C	1.184	1.091	0.092	7.88↓	0.216	0.039	2.354	0.025	S

Table 5- Effect of therapies on Sr. T4 in all groups by using Paired 't' Test

Gr.	Sr. T <sub>4</sub> Mean Value (mg/dL)		Diff.	%	Paired 't' test				Significance
	BT	AT			S.D.	S.E.	t'	P	
A	5.977	7.110	-1.133	20.00↑	2.162	0.355	3.188	0.003	HS
B	6.232	7.062	-0.830	13.32↑	1.980	0.361	2.297	0.029	S
C	7.087	6.681	0.406	5.73↓	2.033	0.3712	1.095	0.282	NS

Table 6- Effect of therapies on BMI in all groups by using Paired 't' Test

Gr.	BMI Mean Value (mg/dL)		Diff.	%	Paired 't' test				Significance
	BT	AT			S.D.	S.E.	t'	P	
A	29.34	28.00	1.34	4.58↓	0.547	0.099	13.438	<0.0001	HS
B	27.25	25.28	1.97	7.23↓	0.791	0.144	13.634	<0.0001	HS
C	28.06	27.54	0.52	1.86↓	0.427	0.078	6.709	<0.0001	HS

## Discussion

Hypothyroidism is characterized by impaired anabolism and catabolism, leading to a decrease in nutrition and immunity.[10] Thyroid hormones play a crucial role in eliminating metabolic wastes from the tissues,[11] and their deficiency can hinder waste excretion, resulting in a condition known as *Malasanchaya*. Additionally, the impaired thyroid function can contribute to the formation of free radicals, which can cause tissue damage. In such circumstances, it is crucial to



undergo *Srotoshodhana*, a process aimed at purifying the channels of the body, which can be effectively achieved through *Samshodhana*.

Hypothyroidism, whether resulting from iodine deficiency or autoimmunity, ultimately leads to a reduction in the availability of thyroid hormones in the body. The conventional method to address this condition typically involves replacing these hormones with synthetic or bio-identical forms. While this approach may seem reasonable at first glance, it falls short as it fails to address the underlying cause of the problem. Autoimmune disease, also known as immune deregulation, involves the body's immune system attacking itself. This self-directed immune response triggers increased inflammation, which significantly impacts various aspects of thyroid metabolism and physiology.

Inflammation exerts suppressive effects on the hypothalamus-pituitary-thyroid (HPT) axis, disrupting the production and regulatory mechanisms of thyroid hormones. This inflammatory response not only reduces the number and sensitivity of thyroid hormone receptors but also impairs the conversion of thyroxine (T4), the inactive form of thyroid hormone, to triiodothyronine (T3), the active form.[12] Consequently, insufficient receptor availability or reduced receptor sensitivity hinders the effective utilization of thyroid medication, irrespective of dosage, as the cells become incapable of utilizing it due to the impaired conversion of T4 to T3.[13]

The most effective approach to resolving this issue is by tackling the problem at its core, which involves regulating the immune system and reducing inflammation. *Samshodhana*, as per Charaka, causes suppression of morbidities by establishing equilibrium of *Doshas* in the body. It creates a harmonious state of all the biological humours in the body thereby enhancing the natural *Prakriti* of person. It promotes strength in an individual and enhances immunity of body thereby reducing the chances of occurrence of disease. Thus through *Samsodhana* most of the toxins and those factors which are responsible for phenomenon of ageing are eliminated thereby promoting longevity and a disease free state.[14] This was the mainstay of the clinical regimen planned in this study using *Vamana* and *Virechana* which are directly or indirectly involved in reducing the inflammatory changes and improve the immunity by their immunomodulation effect (*Rasayana*) thus reducing the symptoms present in Hypothyroidism.

*Kaishor guggulu* used in this study is said to have *Rasayana* effect over the body and an anti-inflammatory effect, thus prolonging the beneficial effects produced by *Samshodhana* process in Hypothyroidism. *Panchkola Churna* has deepana pachana effects while *Punarnavadi Kwatha* is *Shothahara* thereby maintaining the agni and helping in elimination of toxins regularly through excretion, respectively. Hence, the resultant effect of shamana drugs used in this study are immuno modulation and *Agni Deepana*.

## Conclusion

In the present study, *Vamana* followed by *Shamana* therapy was found more effective than other groups in thyroid function tests. *Virechana* followed by *Shamana* therapy was found more effective than *Vamana* followed by *Shamana* in

Weight & BMI reduction. Looking the chronic nature and gradual onset of the disease, sufficient duration is required to cure *Ama* and *Agnimandya* at *Dhatu* level. Results could have been more effective if study would have been done for longer duration.

### **Declaration of patients consent**

The author certify that they have obtained all appropriate patient consent forms. In the form the patients have given his/her consent for relevant clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### **Reference**

1. Cáp J. Substitute hypotyreózy a nadledvinové nedostatečnosti u diabetiků [Hypothyroidism substitution and adrenal insufficiency in diabetic patients]. *Vnitr Lek.* 2009 Apr;55(4):371-4. Czech. PMID: 19449753.
2. RV Jaykuamr. Clinical approach to thyroid disease. *Journal of the association of physician of India.* 2011 Jan; 59:11-13
3. Fatourechi V. Subclinical hypothyroidism: an update for primary care physicians. *Mayo Clin Proc.* 2009;84(1):65-71. doi: 10.1016/S0025-6196(11)60809-4. PMID: 19121255; PMCID: PMC2664572.
4. Unnikrishnan AG, Kalra S, Sahay RK, Bantwal G, John M, Tewari N. Prevalence of hypothyroidism in adults: An epidemiological study in eight cities of India. *Indian J Endocrinol Metab.* 2013 Jul;17(4):647-52. doi: 10.4103/2230-8210.113755. PMID: 23961480; PMCID: PMC3743364.
5. Tripathi R., editor. *Astanga-Samgraha of Vagbhata, Sutra Sthana Ch. 27, Ver. 5.* Reprint ed. Delhi: Chaukhamba Sanskrita Pratishthana; 2005. p. 482.
6. Yadavji Trikamji Acharya, editor. *Charaka Samhita of Agnivesha, Sutra Sthana Ch. 12, Ver.11.* Reprint ed. Varanasi: Chaukhambha Surbharti Prakashana; 2011. P. 80.
7. Sharangadhara, *Sharangadhara Samhita, Dipika Sanskrit commentary of Adhamalla and Gudharth-Dipika Sanskrit commentary of Kashiram, Madhyam Khand Ch. 6, Ver. 13-14.* IV ed. Varanasi: Chaukhamba Orientalia; 2000. p. 180.
8. Sharangadhara, *Sharangadhara Samhita, Dipika Sanskrit commentary of Adhamalla and Gudharth-Dipika Sanskrit commentary of Kashiram, Madhyam Khand Ch. 7, Ver. 70-81.* IV ed. Varanasi: Chaukhamba Orientalia; 2000. p. 203.
9. Sharangadhara, *Sharangadhara Samhita, Dipika Sanskrit commentary of Adhamalla and Gudharth-Dipika Sanskrit commentary of Kashiram, Madhyam Khand Ch. 2, Ver. 118.* IV ed. Varanasi: Chaukhamba Orientalia; 2000. p. 159.
10. Patil Vasant, *Principal and practices of Panchakarma, Ch.2, 2<sup>nd</sup> ed.* New Delhi: Chaukhambha Publication; 2013.p.11.
11. C. Guyton, John E. Hall. *Textbook of Medical Physiology, Ch. 76, 9<sup>th</sup> ed.* Philadelphia: Saunders/Elsevier, 2011. p. 950.
12. Zheng J, Cui Z, Shi N, Tian S, Chen T, Zhong X, Qiu K, Zhang J, Zeng T, Chen L, Li H. Suppression of the hypothalamic-pituitary-thyroid axis is

- associated with the severity of prognosis in hospitalized patients with COVID-19. *BMC Endocr Disord.* 2021 Nov 15;21(1):228. doi: 10.1186/s12902-021-00896-2. PMID: 34781943; PMCID: PMC8591433.
13. Molnár I, Balázs C, Szegedi G, Sipka S. Inhibition of type 2,5'-deiodinase by tumor necrosis factor alpha, interleukin-6 and interferon gamma in human thyroid tissue. *Immunol Lett.* 2002 Jan 1;80(1):3-7. doi: 10.1016/s0165-2478(01)00301-7. PMID: 11716958.
  14. Yadavji Trikamji Acharya, editor. *Charaka Samhita of Agnivesha, Sutra Sthana Ch. 16, Ver.17-19.* Reprint ed. Varanasi: Chaukhambha Surbharti Prakashana; 2011. P. 97.