

AYURVEDIC MANAGEMENT OF PEDIATRIC HYPOTHYROIDISM: A CASE REPORT ON THE EFFECT OF KANCHANARA GUTIKA

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ABSTRACT

Background: Hypothyroidism in children is a metabolic disorder characterized by inadequate production of thyroid hormones, resulting in impaired growth, delayed development, lethargy, weight gain, constipation, and dry skin. In Ayurveda, the condition can be interpreted under *Anukta Vyadhi* with predominance of *Kapha-Vata Dosha* and resemblance to *Galaganda*. *Kanchanara Gutika*, a classical Ayurvedic formulation indicated in glandular and metabolic disorders, was selected for the present case. **Case Presentation:** A 12-year-old female child presented with complaints of lethargy, progressive weight gain, constipation, dry coarse skin, and hair fall for six months. Laboratory investigations revealed elevated serum thyroid stimulating hormone (TSH) levels suggestive of hypothyroidism. Ayurvedic assessment indicated *Kapha-Vata predominance*, *Mandagni*, and *Ama* involvement.

Intervention: The patient was treated with *Kanchanara Gutika* administered orally along with appropriate dietary and lifestyle modifications for 90 days. Clinical symptoms were assessed using a standardized grading scale, and biochemical parameters including serum TSH were monitored before and after treatment. **Results:** After completion of therapy, significant improvement was observed in clinical symptoms such as lethargy, constipation,

dry skin, and weight gain. Biochemical assessment showed reduction in serum TSH levels with improvement in overall clinical score. No adverse effects were reported during the treatment period. **Conclusion:** This case report suggests that *Kanchanara Gutika* may be beneficial in the management of pediatric hypothyroidism by improving both clinical manifestations and biochemical parameters. Further large-scale controlled clinical studies are required to validate these findings.

INTRODUCTION

Childhood is a dynamic period characterized by rapid physical growth, neurological development, and metabolic maturation. Endocrine disorders arising during this critical phase can profoundly influence growth, cognitive function, and overall quality of life. Among these disorders, hypothyroidism is one of the most frequently encountered endocrine conditions in pediatric practice. It results from deficient synthesis, secretion, or action of thyroid hormones, leading to a generalized reduction in metabolic activity. The condition commonly manifests with symptoms such as fatigue, excessive weight gain, constipation, dry and coarse skin, cold intolerance, growth retardation, and impaired cognitive performance. If not recognized and managed promptly, hypothyroidism may adversely affect the physical, intellectual, and psychosocial development of affected children.^[1-5]

Conventional management of hypothyroidism primarily relies on thyroid hormone replacement therapy, which effectively restores hormonal levels and prevents disease progression. However, long-term treatment is often required, and management is largely focused on hormonal correction rather than addressing associated metabolic disturbances. Consequently, there is growing interest in complementary and holistic therapeutic approaches that may support metabolic regulation and improve overall health outcomes.^[1-5]

Although hypothyroidism is not described as a distinct disease entity in the Ayurvedic classics, its clinical presentation can be interpreted under the concept of *Anukta Vyadhi* (unclassified disorders). The pathogenesis may be understood as a consequence of *Kapha-Vata Dosha* predominance associated with *Agnimandya* (impaired metabolic activity), resulting in the formation of *Ama* and subsequent obstruction of *Srotas*. Many clinical features of hypothyroidism, including lethargy, weight gain, constipation, puffiness, and dryness of skin, reflect derangement of *Kapha* and *Vata* along with impaired tissue metabolism. Furthermore, the condition bears resemblance to *Galaganda*, a disorder described in Ayurvedic literature that involves glandular abnormalities and metabolic

dysfunction.^[6-9]

Ayurvedic management of such conditions emphasizes the restoration of metabolic balance through therapies possessing *Deepana* (enhancement of digestive and metabolic activity), *Pachana* (elimination of metabolic toxins), *Lekhana* (reduction of pathological tissue accumulation), and *Kapha-Vata Shamaka* properties. *Kanchanara Gutika*, a classical polyherbal formulation indicated in the management of *Galaganda*, *Granthi*, and *Gandamala*, is traditionally employed for glandular and metabolic disorders. The ingredients of the formulation are reported to possess *Deepana*, *Lekhana*, *Shothahara*, and *Kapha-Vatahara* actions, which may help in improving metabolic function and reducing pathological tissue changes.^[10-12]

Considering the increasing prevalence of pediatric hypothyroidism and the need for safe, effective, and holistic therapeutic options, the present case report was undertaken to evaluate the clinical utility of *Kanchanara Gutika* in a child diagnosed with hypothyroidism. The therapeutic outcome was assessed using both clinical parameters and biochemical investigations to explore its potential role in improving symptomatology and thyroid function.

MATERIALS AND METHODS

Preparation of the formulation

Kanchanara Gutika was prepared in the pharmacy of Sri Srinivasa Ayurveda Pharmacy following the classical formulation described in Bhaishajya Ratnavali (*Galaganda chikitsa adhyaya*) under Good Manufacturing Practices (GMP).

The formulation comprised *Haritaki* (*Terminalia chebula*), *Bibhitaki* (*Terminalia bellirica*), and *Amalaki* (*Emblica officinalis*) (collectively forming *Triphala*), *Shunthi* (*Zingiber officinale*), *Maricha* (*Piper nigrum*), and *Pippali* (*Piper longum*) (collectively forming *Trikatu*), *Kanchanara Twak* (*Bauhinia variegata* stem bark), purified (*Shodhita*) *Guggulu* (*Commiphora mukul*), and *Madhu* (honey). The ingredients and their proportions are presented in Table 1.

Initially, *Triphala*, *Trikatu*, and *Kanchanara* stem bark were cleaned, dried, and pulverized separately into fine powder. The powdered drugs were blended thoroughly to obtain a homogeneous mixture. Purified *Guggulu*, taken in an amount equal to the combined weight

of the powdered ingredients, was dissolved in freshly prepared *Triphala Kwatha* (decoction). The powdered herbal mixture was gradually incorporated into the softened *Guggulu*, followed by the addition of honey as a binding agent. The entire mass was triturated continuously in a mortar until a uniform, pliable consistency suitable for pill formation was achieved.

The prepared mass was then rolled into pills weighing approximately 250 mg each. The pills were dried under shade to ensure adequate hardness and stability and subsequently stored in clean, airtight glass containers until administration.

Table 1: Composition of *Kanchanara Gutika*.

Ingredient	Botanical name	Part used	Proportion
Haritaki	<i>Terminalia chebula</i> Retz.	Fruit	1 part
Bibhitaki	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Fruit	1 part
Amalaki	<i>Emblica officinalis</i> Gaertn.	Fruit	1 part
Shunthi	<i>Zingiber officinale</i> Roscoe	Rhizome	2 parts
Maricha	<i>Piper nigrum</i> L.	Fruit	2 parts
Pippali	<i>Piper longum</i> L.	Fruit	2 parts
Kanchanara	<i>Bauhinia variegata</i> L.	Stem bark	18 parts
Shodhita Guggulu	<i>Commiphora mukul</i> (Hook. ex Stocks) Engl.	Purified gum resin	36 parts
Madhu	Honey	—	30 parts



Kanchanara Tvak



Triphala

**Guggulu****Guggulu sodhana****Sodhita guggulu****Bhavana****Kanchanaragutika**

METHODOLOGY

Selection of Patient

A pediatric patient attending the Outpatient Department (OPD) of Kaumarabhritya was screened for eligibility based on clinical features suggestive of hypothyroidism. A detailed clinical history was obtained, followed by general physical and systemic examination. The diagnosis was established on the basis of clinical findings and biochemical evaluation,

including serum thyroid-stimulating hormone (TSH) Level.

The patient fulfilling the diagnostic criteria for hypothyroidism and whose parent provided written informed consent for treatment and publication of anonymized clinical data was included in the present case study. Baseline clinical findings and laboratory parameters were recorded before initiation of treatment, and the patient was followed up periodically to assess the therapeutic response.

CASE PRESENTATION

a) Patient Information

A 12-year-old female child presented to the Outpatient Department of Kaumarabhritya with complaints of easy fatigability, lethargy, gradual weight gain, constipation, dry coarse skin, and excessive hair fall for the past six months. The symptoms had developed insidiously and gradually increased in severity. There was no history of fever, neck swelling, previous thyroid surgery, radiation exposure, or prolonged medication use. The child's antenatal, natal, and developmental history was unremarkable. Family history revealed hypothyroidism in the mother. On enquiry, the child had reduced physical activity and difficulty participating in routine outdoor activities because of easy fatigability. Appetite was reduced, bowel movements were irregular, and sleep was satisfactory.

Clinical examination and thyroid function tests supported the diagnosis of hypothyroidism. From an Ayurvedic perspective, the condition was assessed as *Anukta Vyadhi* with predominance of *Kapha-Vata Dosha*, associated with *Mandagni*, *Ama*, and involvement of *Rasavaha* and *Medovaha Srotas*.

b) Clinical Findings

The patient presented with a gradual onset of symptoms over a period of six months. The predominant complaints were easy fatigability, lethargy, progressive weight gain, constipation, dry coarse skin, and excessive hair fall. The symptoms gradually progressed and affected the child's routine physical activities.

Clinical evaluation, supported by thyroid function tests, revealed elevated serum thyroid-stimulating hormone (TSH) levels, confirming the diagnosis of hypothyroidism. Baseline clinical assessment was performed using Zulewski's clinical scoring system to determine the severity of hypothyroid manifestations before initiating treatment.

According to Ayurvedic principles, the clinical presentation was suggestive of *Kapha-Vata* predominance associated with *Mandagni* and *Ama*, with involvement of *Rasavaha* and *Medovaha Srotas*.

Timeline

Table 2: Clinical Events.

Time	Clinical Events
6 months before presentation	Gradual onset of lethargy and weight gain
4 months before presentation	Development of constipation and dry coarse skin
2 months before presentation	Progressive increase in hair fall
Day 0	Clinical evaluation and thyroid function tests performed; diagnosis of hypothyroidism established
Day 1	Treatment with <i>Kanchanara Gutika</i> initiated
30 days	First follow-up with improvement in lethargy and bowel habits
60 days	Further improvement in clinical symptoms with reduction in serum TSH levels
90 days	Completion of treatment with clinical and biochemical reassessment

Patient Characteristics

Table 3: Showing the characteristics of patient.

Parameter	Finding
Age	12 years
Sex	Female
Duration of illness	6 months
Family history	Hypothyroidism in mother
Diet	Mixed
Appetite	Reduced
Bowel habits	Constipation
Sleep	Satisfactory
Pulse rate	84bpm
Respiratory Rate	18 breaths/min

Baseline Clinical Features

Table 4: Clinical feature.

Clinical Feature	Present
Lethargy	Yes
Weight gain	Yes
Constipation	Yes
Dry coarse skin	Yes
Hair fall	Yes

Baseline Laboratory Investigations

Table 5: Showing the laboratory investigations.

Investigation	Before treatment	Reference range
TSH	8.34 μ IU/mL	0.5–5.0 μ IU/mL

c) Diagnostic Assessment

The diagnosis of primary hypothyroidism was established based on the patient's clinical history, physical examination, and thyroid function test. Biochemical evaluation revealed elevated serum thyroid-stimulating hormone (TSH) levels, confirming the diagnosis. The severity of clinical manifestations was assessed using Zulewski's clinical scoring system before initiation of treatment.

From the Ayurvedic perspective, the condition was interpreted as *Anukta Vyadhi* with predominance of *Kapha* and *Vata Dosha*. The underlying pathogenesis was considered to involve *Mandagni*, resulting in the formation of *Ama* and subsequent involvement of *Rasavaha* and *Medovaha Srotas*. This clinical assessment formed the basis for selecting *Kanchanara Gutika* as the therapeutic intervention.

d) Therapeutic Intervention

Following the diagnosis, the patient was treated with *Kanchanara Gutika* prepared according to the classical reference described in *Bhaishajya Ratnavali*. The formulation was administered orally for a period of 90 days.

Considering the patient's age (12 years), a dose of two tablets (250 mg each) twice daily after food was prescribed. Lukewarm water was used as the *Anupana* throughout the treatment period.

Along with the study medication, appropriate dietary and lifestyle modifications were advised. The patient was encouraged to consume freshly prepared, light, and easily digestible meals and to maintain adequate hydration with lukewarm water. Regular age-appropriate physical activity and adequate sleep were also recommended. Foods that were excessively oily, fried, refrigerated, processed, or difficult to digest were avoided during the treatment period. No other Ayurvedic or conventional medications for hypothyroidism were administered concurrently.

The patient was reviewed at scheduled follow-up visits to assess treatment compliance,

monitor clinical progress, and identify any adverse events throughout the intervention period.

Follow-up and Outcomes

The patient was followed up at 30-day intervals throughout the 90-day treatment period. Clinical improvement was assessed based on symptom severity, physical examination, thyroid function tests, and Zulewski's clinical score.

During the first follow-up (30 days), the patient reported improvement in lethargy and bowel habits. Mild reduction in dryness of the skin and hair fall was also observed.

At the second follow-up (60 days), further improvement was noted in energy levels, constipation, and skin texture. Hair fall had reduced considerably, and the patient was able to perform routine daily activities with less fatigue.

At the end of 90 days of treatment, marked improvement was observed in the overall clinical condition. Weight gain had stabilised, bowel habits became regular, and symptoms including lethargy, dry coarse skin, and hair fall showed significant improvement. Repeat thyroid function tests demonstrated a reduction in serum TSH levels compared with baseline values. Improvement was also observed in Zulewski's clinical score. No adverse drug reactions or treatment-related complications were reported during the study period.

Assessment Before and After Treatment

Table 6: Assessment of Clinical Symptoms Before and After Treatment.

Clinical parameter	Before treatment	After 90 days
Lethargy	Present	Absent
Easy fatigability	Present	Markedly improved
Weight gain	Progressive	Stabilised
Constipation	Present	Absent
Dry coarse skin	Present	Markedly improved
Hair fall	Present	Reduced
Physical activity	Reduced	Improved
Overall clinical status	Symptomatic	Significantly improved

Table 7: Thyroid-Stimulating Hormone (TSH) Function Tests Before and After Treatment.

Investigation	Before treatment	After 90 days	Reference range
TSH (μ IU/mL)	8.34	4.75	0.5–5.0

Table 8: Zulewski's Clinical Score.

Assessment	Score
Before treatment	8
After treatment	3

DISCUSSION

Hypothyroidism during childhood is associated with inadequate thyroid hormone activity, resulting in reduced basal metabolic rate and impairment of normal growth, physical performance, and neurocognitive development. Children often present with nonspecific manifestations such as lethargy, progressive weight gain, constipation, dry skin, and hair fall, which may delay recognition of the disease.^[1,2,3] In the present case, the patient exhibited these characteristic clinical features together with elevated serum thyroid-stimulating hormone (TSH) levels, confirming the diagnosis of hypothyroidism. Following 90 days of treatment with *Kanchanara Gutika*, gradual improvement was observed in both the clinical manifestations and biochemical parameters, suggesting a favourable therapeutic response.

Although hypothyroidism is not described as an independent disease entity in the Ayurvedic classics, its clinical presentation can be interpreted under the concept of *Anukta Vyadhi*. The pathogenesis can be understood in terms of *Kapha-Vata* predominance associated with *Mandagni*, leading to the formation of *Ama* and subsequent obstruction of *Srotas*.^[6,7,9] Impaired *Agni* reduces the transformation and utilisation of nutrients, while accumulated *Ama* interferes with normal physiological functions. The resulting derangement of *Rasavaha* and *Medovaha Srotas* may explain the metabolic slowing and symptoms such as lethargy, constipation, weight gain, dry skin, and hair fall observed in this patient.

The selection of *Kanchanara Gutika* was based on its classical indication in disorders involving glandular enlargement and altered tissue metabolism, including *Galaganda*, *Granthi*, and *Gandamala*.^[9] Although pediatric hypothyroidism cannot be directly equated with *Galaganda*, similarities in the underlying *Kapha*-dominant pathology and impaired metabolic function provide a rational basis for employing this formulation. The therapeutic approach of Ayurveda focuses not merely on symptomatic relief but on restoring metabolic homeostasis through correction of *Agni*, elimination of *Ama*, and normalisation of *Srotas* function.^[6,7]

The ingredients of *Kanchanara Gutika* possess complementary pharmacological properties that may collectively contribute to the observed clinical improvement. *Trikatu* (*Shunthi*,

Maricha, and *Pippali*) is traditionally known for its *Deepana* and *Pachana* actions, which improve digestive and metabolic activity. Piperine, the principal alkaloid present in *Piper nigrum* and *Piper longum*, has been reported to enhance gastrointestinal absorption and improve the bioavailability of several phytoconstituents, thereby increasing the therapeutic effectiveness of polyherbal formulations.^[13] *Triphala* possesses antioxidant, digestive, and mild laxative properties that help maintain gastrointestinal function and may have contributed to the improvement in bowel habits observed during treatment.^[14]

Shodhita Guggulu (*Commiphora mukul*), one of the major constituents of the formulation, has been extensively investigated for its anti-inflammatory, antioxidant, hypolipidaemic, and metabolic regulatory activities. Experimental studies have suggested that guggulsterones may influence lipid metabolism through modulation of nuclear receptors involved in metabolic homeostasis. In addition, experimental evidence has demonstrated thyroid-stimulatory activity of *Commiphora mukul*, indicating its potential role in supporting thyroid function, although robust clinical evidence in pediatric populations remains limited.^[15,16] *Kanchanara* (*Bauhinia variegata*) has also demonstrated antioxidant and anti-inflammatory activities in experimental studies, providing pharmacological support for its traditional use in glandular disorders.^[11,17]

An important observation in the present case was the sequential pattern of clinical improvement. During follow-up, the patient initially experienced better bowel regularity and reduction in fatigue, followed by improvement in skin texture, hair fall, and overall physical activity. By the end of the 90-day treatment period, body weight had stabilised and serum TSH levels had declined when compared with baseline values. Improvement in Zulewski's clinical score further supported the favourable clinical response. The absence of adverse drug reactions throughout the treatment period suggests that the intervention was well tolerated under the prescribed regimen.

The findings of the present case are in agreement with previously published Ayurvedic clinical studies, which have reported encouraging outcomes with *Kanchanara*-based formulations in patients with thyroid dysfunction and other glandular disorders.^[18,19,20] However, the available evidence remains limited because most studies involve relatively small sample sizes and heterogeneous study designs. Consequently, the observations from this report should be interpreted with appropriate caution. Since this is a single case report, spontaneous clinical variation, dietary modifications, and individual patient factors cannot be

completely excluded as contributors to the observed improvement.

Nevertheless, the present case demonstrates that administration of *Kanchanara Gutika* along with appropriate dietary and lifestyle modifications was associated with improvement in both clinical symptoms and thyroid function without any observed adverse effects. While these findings are encouraging, larger well-designed controlled clinical studies with longer follow-up are required to establish the efficacy, safety, and mechanism of action of *Kanchanara Gutika* in the management of pediatric hypothyroidism.

CONCLUSION

This case demonstrates that treatment with *Kanchanara Gutika*, together with appropriate dietary and lifestyle measures, was associated with meaningful improvement in both the clinical manifestations and biochemical profile of a child with hypothyroidism over a 90-day treatment period. The intervention was well tolerated, and no adverse events were observed during follow-up. The favourable outcome seen in this patient supports the classical Ayurvedic approach of addressing metabolic dysfunction through correction of *Agni*, elimination of *Ama*, and restoration of *Dosha* balance rather than focusing solely on symptomatic relief.

As this report describes the outcome in a single patient, the observations should be interpreted with appropriate caution. Nevertheless, the encouraging clinical response warrants further systematic investigation through well-designed controlled clinical studies to better define the therapeutic role of *Kanchanara Gutika* in the management of pediatric hypothyroidism.

Patient Perspective

The patient's parent reported that the child showed gradual improvement during the course of treatment. The child became more active, complained less of tiredness, and was able to participate in daily school and outdoor activities with greater ease. Constipation improved, and the dryness of the skin and hair fall gradually reduced over the treatment period. The parent also expressed satisfaction with the treatment, as it was well tolerated and no adverse effects were noticed during the three months of therapy.

Ethical Considerations

Written informed consent was obtained from the patient's parent/legal guardian before

initiation of treatment and again for publication of this case report and accompanying anonymised clinical information. The identity of the patient has been protected by removing all personal identifiers to maintain confidentiality and privacy. Ethical clearance (IEC/SVAYC/KB/20/26 dated on 26/03/2021) was obtained from the Institutional Ethics Committee of TTD's S.V. Ayurvedic college, Tirupati.

Conflict of Interest

No conflict of interest.

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