University of North Carolina Asheville
Journal of Undergraduate Research
Asheville, North Carolina
Fall 2025

# Beyond Hormone Replacement: A Meta-Analysis of Traditional Chinese Medicine and Complementary Therapies for Hashimoto's Thyroiditis

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# 1. Abstract


## Objective

There currently exist two Western treatments, Levothyroxine (LT4) and Natural Desiccated Thyroid (NDT), for Hashimoto's Thyroiditis (HT). These treatments restore hormonal balance but do not address the underlying pathogenesis. This meta-analysis aims to evaluate the clinical efficacy of Traditional Chinese Medicine (TCM), herbal medicine (HM), dietary changes, and targeted supplementation (TS), while also examining the link between environmental toxins and the increasing prevalence of autoimmune disorders. Recent research and discoveries, such as the interstitium, provide greater context and evidence that these alternative therapies offer promising immune-modulating, anti-inflammatory, antioxidant, and endocrine-regulating properties.

## Methods

A comprehensive search strategy was developed and conducted across ScienceDirect, The National Institutes of Health, Nature, and The Chinese Medical Journal databases. Human and animal studies were included, given that the study helped assess the effects of TCM, HM, or TS. Some TCM studies, not specifically about HT but focused on other health conditions, were included to extrapolate more information about the healing effects, given the limited research on this niche subject.

## Results

Overall, the findings suggest that TCM, HM, and TS, when used in combination with Western medicine, enhance the clinical efficacy of treating HT. However, further research is needed to understand the potential of this integrative approach.

# 2. Methods

A literature search was conducted between October 2024 and January 2025 across ScienceDirect, NIH (PubMed), Nature, and the Chinese Medical Journal database. Searches included studies published from 1985 - 2025. Keyword combinations included: “Hashimoto's thyroiditis,” “Traditional Chinese Medicine,” “herbal medicine,” “selenium,” “Nigella sativa,” “gluten-free diet,” “autoimmune thyroiditis,” “glyphosate,” “interstitium,” “acupuncture,” “immune modulation,” and “complementary therapies.” Boolean operators (“AND,” “OR”) linked terms to maximize sensitivity.

A total of 5,189 papers were identified. After removing duplicates, 457 abstracts were screened. Of these, 78 full-text articles were reviewed and 22 studies met the inclusion criteria. Screening involved reviewing titles/abstracts and conducting follow-up (f/u) full-text assessments for eligibility. Extracted data included: author/year, sample size, participant (ps) characteristics, treatment type, dosage, duration, diagnostic criteria, biomarkers (TPOAb, TGAb, TSH, FT3, FT4), inflammatory cytokines, and adverse effects. Studies with P values greater than or equal to 0.5 were considered statistically significant and included in the results. Due to heterogeneity in study designs, dosages, diagnostic patterns, and outcome measures, a narrative synthesis approach was used rather than quantitative pooling. Trends in antibody reduction (red), symptom improvement, hormonal regulation, inflammatory markers, and adverse events were summarized across studies.

# 3. Introduction

Hashimoto's Thyroiditis (HT) is a chronic autoimmune disease whereby the immune system attacks thyroid cells, often leading to “subclinical or overt hypothyroidism in areas with sufficient iodine intake” (Mincer, 2025). HT is the most common autoimmune and endocrine disease and is the leading cause of hypothyroidism in the United States. It disproportionately affects women, with an estimated 7-10:1 female-to-male ratio (Mincer, 2025).

During disease onset, this self-mediated immune attack causes chronic inflammation and impaired thyroid hormone production, resulting in a range of symptoms: fatigue, weight gain, and brain fog. Hormones, particularly during pregnancy, postpartum, and perimenopause, play significant roles in the onset of symptom appearance. Growing research also highlights the importance of epigenetics and environmental factors in the development and progression of HT.

Although the pathogenesis of HT is not entirely understood, three major contributors have been identified: oxidative stress, immune imbalance, and genetic variation (Mincer, 2025). Conventional medicine primarily addresses the disease through lifelong Levothyroxine (LT4) therapy, which stabilizes thyroid hormone levels but falls short in addressing the underlying pathogenesis which leads to persistent symptoms. For this reason, scholars and practitioners have gradually turned their attention toward integrative perspectives, including Traditional Chinese Medicine (TCM), Targeted Supplementation (TS), and Herbal Medicine (HM) interventions. This shift towards integrative medicine and the increase in research on the connection between the development of chronic autoimmune diseases and environmental toxins underscore how both external exposures and our epigenetics shape disease expression and influence treatment outcomes. This provides a critical insight into why alternative, holistic strategies alongside Western biomedical approaches are essential for the future of HT care.

## 3.1 Epigenetics

Alongside the rise in autoimmune disease, exposure to environmental toxins has also increased. Glyphosate is an herbicide used in urban landscaping and non-organic farming, primarily used on wheat and corn crops – staples of the standard American diet. It has been shown to disrupt the gut microbiome, and studies in both humans and animal models demonstrate that pesticide exposure can alter lipid metabolism, increase inflammation, and generate oxidative stress (Chiu, 2020). These disruptions link glyphosate to immune disturbance, dysbiosis, and immune-endocrine alterations. Additionally, it has been linked to changes in the human genome, including polymorphisms (Kelada, 2003), which explain how environmental toxins influence both treatment response and susceptibility to autoimmune conditions.

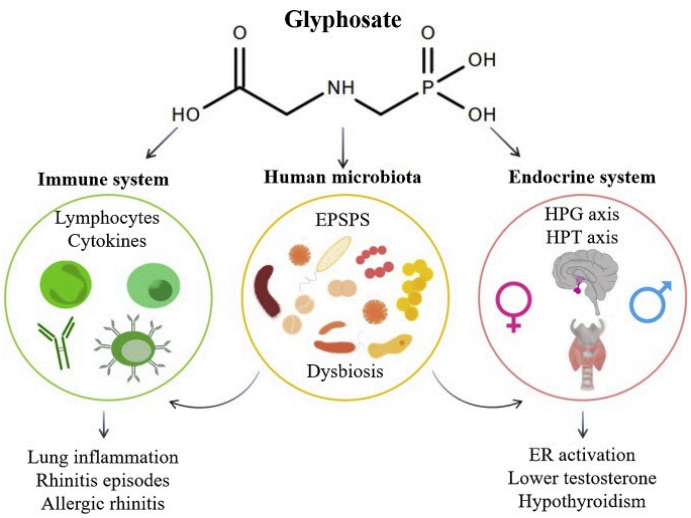


**Figure. 1.** Graphic illustration of the interactions between the microbiota, immune and endocrine systems and the reviewed effects of glyphosate and glyphosate-based herbicides, outlining potential health outcomes (Maddalon, 2021).

# 4. Pathogenesis

The pathogenesis of HT begins with immune cell infiltration and connective tissue thickening within thyroid follicles. Individuals with HT have thyroid peroxidase antibodies (TPO), thyroglobulin antibodies (TgAb), and thyroid-stimulating hormone (TSH) receptor antibodies (Mincer, 2025). Activation of cytotoxic T-cells (CD8+ T cells) and helper Treg-cell (T-cell) subsets (Th1, Th2, Th17, and Tregs) triggers macrophages and B cells to produce autoantibodies. This process contributes to the autoimmune progression of HT. Thyroid Hormone 1 (Th1) is upregulated in HT, promoting inflammation in the thyroid tissue. T-cells are critical for promoting immune tolerance and preventing excessive immune responses (Mincer, 2025). In HT, T-cells are downregulated, leading to immune-mediated thyroid attack. Blood tests often show elevated antibody levels against thyroid peroxidase (TPO) and thyroglobulin (TG) in HT patients. These proteins are essential for normal thyroid hormone production. When the immune system makes antibodies against them, it damages thyroid cells and interferes with hormone synthesis, leading to hypothyroidism.

## 4.1 Stages of HT

There are three stages of HT: self-limited thyrotoxicosis, euthyroid state, and hypothyroidism. The initial stage of thyrotoxicosis is short-lived, caused by an excessive amount of thyroid hormones in the bloodstream. This is when clinical symptoms begin to surface, like weight loss, heat intolerance, and palpitations. In some cases, patients can remain asymptomatic (Blick, 2020). Additionally, older patients frequently display fewer classic clinical features. They may instead present with cardiovascular manifestations such as heart failure and arrhythmias, along with hypercalcemia, depression, fatigue, and unintentional weight loss. This is referred to as "apathetic hyperthyroidism" and may be mistaken for age-related conditions. In both cases,

symptoms can be easily dismissed by individuals and practitioners alike, missing the opportunity to treat HT in its earliest stages. The second stage is the euthyroid phase, in which the remaining healthy thyroid cells work harder to compensate for the damage caused by thyrotoxicosis. This results in hormone levels returning to normal and symptoms temporarily subsiding. Eventually, most patients progressively move towards the third phase, hypothyroidism. This is when the remaining healthy thyroid cells cannot keep up with the demand to produce Triiodothyronine (T3) and Thyroxine (T4), leading to the thyroid becoming underactive.

# 5. Western Treatments Overview

Conventional treatment primarily involves synthetic thyroid hormone LT4, which contains only T4, and NDT, a natural extract derived from pig thyroid glands that contains both T4 and T3 hormones. Although HT patients have “normal” TSH levels after using these intervention strategies, many still report a suboptimal health-related quality of life (HRQoL), specifically experiencing persistent symptoms compatible with hypothyroidism (Mincer, 2025). This highlights an unmet medical need in this area.

In 2025, Hui Zhang et al. (2025) published a peer-reviewed article outlining several proposed mechanisms underlying these persistent symptoms. These mechanisms include the impairment of T4 to T3 conversion, autoimmune inflammation, and genetic polymorphisms that affect thyroid hormone transport and metabolism. Along with these possible explanations, an ideal treatment for hypothyroidism is still debated because many factors play into dosage, such as etiology, severity, demographics, and “residual functional thyroid tissue affecting the LT4 dosage” (Zhang, 2025).

## 5.1 LT4 Limitations and Side Effects

LT4 is a manufactured hormone, typically considered a lifelong treatment. Variations in the iodothyronine deiodinase 2 (DIO2) gene, especially the common Thr92Ala variant, can impair T4-to-T3 conversion, affecting treatment effectiveness (Castagna, 2017). Not only suggesting that combination therapy would be a better approach, but that epigenetics also plays a role in treatment outcomes.

A 2020 cohort study researching LT4 on subclinical hypothyroidism (SCH) found that LT4 "[demonstrated] no clinically relevant benefits…for quality of life or thyroid-related symptoms" (Ochani, 2022). A heightened risk of developing cancer in both sexes, along with greater susceptibility to cardiovascular disease, osteoporosis, and bone fractures (Ochani, 2022), were also associations found within this study. It was concluded that "long-term dosing of [LT4] does not provide any benefit, but can predict the harm" (Ochani, 2022).

## 5.2 NDT Limitations and Side Effects

According to the Food and Drug Administration (FDA), NDT is not an approved medication, yet it is still prescribed as part of usual care in many practices worldwide. The critique of NDT is the inconsistent potency of TSH in the bloodstream. In a 2024 systematic review (Ryom, 2024), they found that this inconsistency can result in adverse side effects like "increase in heart rate, lower body weight, and lower high-density lipoprotein compared with other treatment regimens." They noted that their results showed this drug intervention may make patients feel better compared with nonrandomized studies, but no clear advantage was found over LT4 treatment. "The overall quality of evidence was moderate to very low for the various outcomes," (Ryom, 2024) which ultimately calls for more research to understand this intervention strategy further. Further research is needed to better understand this treatment's safety, efficacy, and quality.

# 6. Gut-Thyroid Axis

The gut-thyroid axis is the bi-directional relationship between gut microbiota and the thyroid gland. Dysbiosis describes an imbalance in the gut microbiome, which can be a direct result of a poor diet, glyphosate exposure, and/or a side effect of medications. Dysbiosis is a common finding in thyroid disorders (Knezevic, 2020). This is because the gut plays a significant role in immune and endocrine regulation, as it not only influences nutrient and mineral absorption but also protects the bloodstream from exposure to harmful pathogens and toxins. Dysbiosis leads to inflammation, which can damage the intestinal membrane, increasing permeability and thereby the likelihood of autoimmune disorders such as HT (Knezevic, 2020).

## 6.1 TCM and Microbiota Regulation

A 2023 study (Li) examining the gut-endocrine axis and TCM-related interventions to combat dysbiosis found that several TCM formulas help improve metabolic and endocrine balance. The study (Li, 2023) found that sijunzi decoction, shenling baizhu powder herbal formula, jinqi hypoglycemic tablets, shen-yan-fang-shuai formula, and gegenqinlian decoction were the most effective in combating dysbiosis. The sijunzi decoction contains ginseng, atractylodes macrocephala, poria, and glycyrrhiza glabra and was found to have immunomodulatory effects by “regulating the number of gut microbiota and short-chain fatty acid levels” (Li, 2023). Shenling baizhu powder herbal formula is composed of lotus seed meat, coix kernel, sand kernel, bellflower, poria, ginseng, and licorice (Li, 2023). It was shown to help repair the intestinal mucosa and may reduce Toll-like Receptor 4 (TLR4) related protein expression, thereby lowering inflammatory markers such as Tumor Necrosis Factor-alpha (TNF-α) and Interleukin-1 (IL-1), and increasing the microbiota profile (Li, 2023). Similar to Shenling Baizhu, Jinqi hypoglycemic tablets, made from Huang Lian, Huang Qi, and Jin Yin Hua, promote microbial homeostasis. It

also stimulated short-chain-fatty acid production by enhancing gut barrier integrity and suppressing inflammatory markers (Li, 2023). Shen-Yan-Fang-Shuai formula contains Astragali Radix, Radix Angelicae Sinensis, Rheum Officinale Baill, and several other herbs. This formula demonstrated protective effects against systemic inflammation and insulin resistance.

This study (Li, 2023) concluded that TCM formulas and interventions are associated with regulating gut microbiota imbalance, lowering blood lipid levels, reducing inflammatory damage, and improving energy metabolism. Although these results were extrapolated from high-fat diet rats, they suggest promising potential for patients with HT due to similarities in downregulation of inflammatory markers, modulation of the gut microbiota, and restoration of the gut barrier.

# 7. Comorbidites

HT and Celiac Disease (CD) are autoimmune disorders with overlapping Human Leukocyte Antigen (HLA) and immune regulatory genes that predispose individuals to multiple autoimmune conditions. The sharing of these specific immune genes – HLA-DQ2/DQ8 haplotypes, Cytotoxic T-Lymphocyte-Associated protein 4 (CTLA4) polymorphisms, and Th1 cytokine profiles – helps explain their frequent coexistence and suggests that ingesting gluten may trigger an immune response that exacerbates thyroid inflammation (Ashok, 2022).

This connection also supports that HT symptoms extend beyond the thyroid, implicating shared inflammatory and immune pathways with other organ-specific disorders. Recognizing these shared genetic and autoimmune mechanisms adds to the integrative model of care that is proposed in this meta-analysis. This aligns with the integration of TCM which not only addresses the immune system but also the gut-thyroid axis. Furthermore, this information can help those diagnosed with HT understand that implementing a gluten free diet may yield better symptom management and improve overall well-being.

## 8. Targeted Supplementation

Selenium, iodine, vitamin D, and iron are all essential in thyroid function. Although TS of these minerals and nutrients is integral in thyroid health – modulating both inflammatory and immune responses – both deficiency or oversupplementation can lead to adverse effects. Selenium supports thyroid hormone conversion (T4 to T3) and reduces oxidative stress, but excess selenium can be toxic and may increase the risk of diabetes (Liontiris, 2017). Iodine is essential for thyroid hormone synthesis, but oversupplementation is linked to increased thyroid autoimmunity and hypothyroidism (Liontiris, 2017). Vitamin D, too, when over-supplemented, increases the risk of hypercalcemia, kidney stones, and vascular calcification (Liontiris, 2017). Due to the risks associated with under- or over-supplementation, it is important for HT patients to consult a registered dietitian or physician knowledgeable in this area of health and wellness.

## 9. The Interstitium

In 2018, a significant advancement in anatomical research identified a previously 'unrecognized' structure as a potential 80th organ of the human body, termed the interstitium. Although it may have been 'unrecognized' in Western culture until being first recorded in the 1800s, TCM practitioners have consistently recognized this part of our body as the San Jiao. The term "interstitium," derived from the Latin meaning "an intervening space," refers to the fluid-filled tissue spaces distributed throughout the body that envelop every organ. Historically, this structure was dismissed as a mere passive element, often regarded as a waste product. However, contemporary research has revealed its crucial biological roles. Thick collagen bundles and an asymmetric lining of fibroblast-like cells characterize it. These cells play a crucial role in organ protection, mechanotransduction, and the regulation of immune cell trafficking.

Research has shown that the interstitial fluid serves as a conduit for metastasis, facilitating the dissemination of cancer cells to lymph nodes. Although the interstitium has yet to be formally classified as an organ, its significance is deeply interwoven with the principles of acupuncture and TCM. Within TCM, acupoints connect surface points with visceral organs through the flow of interstitial fluid (ISF) rather than defined vessels (Li, 2021). This ISF consists of hyaluronic acid, which is circulated throughout the entire body, and parallels the TCM concept of Jin, Ye, and Yin, which flows through the San Jiao.

Recent research utilizing MRI and fluorescent imaging has illuminated extensive ISF pathways and distinguished them from blood and lymphatic vessels. TCM teaches that the human body comprises 12 primary meridians, each corresponding to specific organ systems. Remarkably, the findings regarding ISF flow networks mirror this delineation, aligning with the established meridian system and suggesting a potential physiological explanation for these traditional concepts.

This groundbreaking work has helped reframe the concept of the interstitium, elevating its importance within the context of human physiology and autoimmune disease research. It invites a reevaluation of established medical paradigms and offers new insights into the intricate interconnections underlying health and pathology. The exploration of the interstitium may yield profound implications for autoimmune disease prevention/treatment thus bridging the gap between ancient wisdom and modern science. As these connections become clearer, integrative therapies such as TCM not only gain scientific legitimacy but a more defined place within mainstream healthcare. This shift has the potential to reshape treatment accessibility, expanding evidence-informed options for patients and advancing a more integrated model of care.

# 10. Nigella Sativa

Nigella sativa (NS) has been referred to as a “miracle herb” in emerging research, largely due to its primary active compound, thymoquinone (TQ) (Ahmad, 2013). TQ exerts anti-inflammatory, antioxidant, and immune-modulating effects. It reduces pro-inflammatory cytokines (IL-1β, IL-6, TNF-α, IFN-γ) while increasing the anti-inflammatory cytokine IL-10 (Ahmad, 2013). NS also exhibits antimicrobial and biofilm-inhibiting properties, making it a promising agent for addressing dysbiosis.

Antioxidant activity induced by NS is important for HT because it addresses the oxidative stress which accelerates autoimmune thyroid damage. NS mitigates this by lowering lipid peroxidation and enhancing endogenous antioxidant systems – including superoxide dismutase (SOD), catalase, glutathione, and overall total antioxidant capacity (Ahmad, 2013). Across multiple experimental models, NS has been shown to protect tissues such as the liver, kidneys, brain, red blood cells, and gut from oxidative injury (Ahmad, 2013).

# 11. Results

## 11.1 TCM-formulated HM Interventions

Table 1 (Luo, 2024)

| Study | HM formula | Control group (cgrp) | Number of participants (ps) R/A | Average age (SD) | HT diagnostic criteria (TCM diagnostic pattern(s), if reported) | Thyroid function | Duration of HT | Treatment duration (*Length of f/u) | Outcome |
|---|---|---|---|---|---|---|---|---|---|
| P. Chen (2021) | Bailing tablets | placebo | HM grp:32/30 Cgrp:32/31 | HM grp: 36.53 (10.78) Cgrp: 33.65 (8.56) | Chinese Guidelines for Diagnosis and Treatment of Thyroid Disease (Qi deficiency) | Subclinical hypothyroidism | HM grp: 10.83 ± 3.10 years (yrs) Cgrp: 9.81 ± | 12 weeks (wks) (*12 wks) | Alleviation of hypothyroidism red of TGAb, TPOAb titers Improvement of Qi Deficiency Syndrome |

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|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2.91 yrs | | |
| YH. Ding (2020) | Shugan-Jianpi-Yangxue medicine | Follow-up observation (Fuo) | HM grp:20/20 Cgrp:20/20 | HM grp: 38.20 (11.21) Cgrp: 36.75 (10.06) | Chinese Guidelines for Diagnosis and Treatment of Thyroid Disease (Liver depression and spleen deficiency) | Euthyroidism | 75% of ps: 1–3 yrs | 3 mos (*3 mos) | Red of TGAb, TPOAb titers Symptom improvement Decreases IL-6 and TNF-α |
| JN. Fan (2016) | Yiqi yuying decoction | Fuo | HM grp:30/29 Cgrp:30/30 | HM grp: 36.69 (10.3) Cgrp: 35.70 (9.69) | Chinese Guidelines for Diagnosis and Treatment of Thyroid Disease and Guidelines for the diagnosis and treatment of chronic lymphocytic thyroiditis (Deficiency of both qi and yin) | Euthyroidism | Not reported (NR) | 3 mos (*3 mos) | Red of TGAb, TPOAb titers Symptom improvement red of thyroid Thickness |
| H. He et al., 2017 | Shugan xiaoying decoction | Fuo | HM grp:49/47 Cgrp:46/46 | All ps:36.8 (3.2) | Morita Lu criteria (Japanese Ministry of Health and Welfare criteria) (Qi stagnation and phlegm obstruction) | Euthyroidism | All ps:2 mos-6 yrs | 3 mos (*3 mos) | Maintaining thyroid function red of TGAb, TPOAb titers Symptom improvement |
| GQ. Hu and Chen, 2015 | Shugan Sanjie Prescription | placebo | HM grp:54/54 Cgrp:54/54 | HM grp: 36.30 (1.38) Cgrp: 38.54 (1.54) | NR | Euthyroidism | NR | 3 mos (*3 mos) | Red of TGAb, TPOAb titers Symptom improvement |
| FJ. Liu (2017) | Liqi xiaoying decoction | Fuo | HM grp:39/39 Cgrp:39/39 | HM grp: 18-70 Cgrp: 20-68 | Chinese Guidelines for Diagnosis and Treatment of Thyroid Disease | Euthyroidism | NR | 2 mos (*2 mos) | Red of TGAb, TPOAb titers red of thyroid Thickness |
| YL. Liu, 2017 | Yiqi Huayu Recipe | Fuo | HM grp:56/56 Cgrp:56/56 | HM grp: 32.15 (11.23) Cgrp: 33.06 | Chinese Guidelines for Diagnosis and Treatment of | Euthyroidism | HM grp: 2.62 ± 2.32 Cgrp: | 6 mos (*6 mos) | Maintaining thyroid function red of TGAb, TPOAb titers |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | (11.05) | Thyroid Disease | | 2.81 ± 2.53 | | |
| LJ. Tan et al., 2019 | Xiaoying Mixture | placebo | HM grp:32/28 Cgrp:32/32 | HM grp: 33.61 (6.49) Cgrp: 32.34 (6.67) | Chinese Guidelines for Diagnosis and Treatment of Thyroid Disease | Euthyroidism | NR | 12 wks (*12 wks) | Red of TGAb, TPOAb titers |
| YY. Tian et al., 2020 | Bailing Capsule | Fuo | HM grp:30/30 Cgrp:30/30 | HM grp: 37.5 (9.5) Cgrp: 38.5 (10.2) | Chinese Guidelines for Diagnosis and Treatment of Thyroid Disease | Euthyroidism | HM grp: 10.1 ± 1.6 yrs Cgrp: 9.2 ± 2.5 yrs | 6 mos (*6 mos) | Red of TGAb, TPOAb titers |
| QY. Wang, 2015 | Erxian Formula Decoctio n | Fuo | HM grp:57/52 Cgrp:57/51 | HM grp: 36.09 (8.58) Cgrp: 35.06 (9.08) | Practical Endocrinolog y | Euthyroidism or Subclinical hypothyroidism | NR | 12 wks (*12 wks) | Alleviation of hypothyroidism Red of TGAb titers Red of Thyroid Volume Symptom improvement |
| XQ. Wu et al., 2012 | Shugan liqi xiaoying formula | Fuo | HM grp:30/30 Cgrp:30/30 | HM grp: 39.40 (11.39) Cgrp: 38.90 (10.25) | Morita Lu criteria (Japanese Ministry of Health and Welfare criteria) | Euthyroidism | NR | 3 mos (*3 mos) | Red of TGAb, TPOAb titers |
| ZB. Xi (2018) | Tiaoqi-Qi ngjie Therapy | Fuo | HM grp:24/24 Cgrp:24/24 | HM grp: 39.54 (12.34) Cgrp: 39.58 (12.60) | Chinese Guidelines for Diagnosis and Treatment of Thyroid Disease (qi stagnation and throat and poison internal injury) | NR | HM grp: 0.573 ± 0.289 mos Cgrp: 0.572 ± 0.283 mos | 6 mos (*6 mos) | Symptom improvement Red of TGAb, TPOAb titers |
| QJ. Xu (2018) | Shugan sanjie therapy | placebo | HM grp:60/60 Cgrp:60/60 | HM grp: 42.03 (5.27) Cgrp: 41.25 (6.03) | NR | Euthyroidism | NR | – | Red of TRAb, TGAb, TPOAb titers Symptom improvement |
| XQ. Zhang 2018 | Xiaoyao Pill | Fuo | HM grp:40/40 Cgrp:40/40 | HM grp: 36.2 (6.4) Cgrp: 35.6 (6.8) | Internal Medicine | Euthyroidism | NR | 3 mos (*3 mos) | Red of TSH level Red of TPOAb titers |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ZY. Duan (2019) | Qi-invigorating phlegm and Blood-Activating Therapy | Fuo | HM grp:32/31 Cgrp:32/30 | HM grp (Euthyroidism): 31.9 (11.8) HM grp (Subclinical hypothyroidism): 41.2 (12.5) Cgrp (Euthyroidism): 38.6 (10.9) Cgrp (Subclinical hypothyroidism): 42.4 (13.8) | Chinese Guidelines for Diagnosis and Treatment of Thyroid Disease (Spleen deficiency phlegm stasis) | Subclinical hypothyroidism or Euthyroidism | NR | 12 wks (*12 wks) | Symptom improvement Red of TSH level Red of TGAb, TPOAb titers Red of Thyroid Volume |
| AF. Mahdieh et al., 2018 | Nigella sativa powder | placebo | HM grp:23/20 Cgrp:24/20 | HM grp: 35.70 (8.18) Cgrp: 33.95 (8.72) | NR | NR | | | |

Across sixteen RCTs (Luo, 2024) involving 1,184 ps, herbal medicine interventions consistently reduced thyroid antibodies and improved symptom scores in Hashimoto's thyroiditis. Table 1. summarizes key study characteristics. Ps were primarily female adults (18-70 years (yrs)), most with euthyroid or subclinical hypothyroidism. Treatment duration ranged from 8 to 24 weeks (wks). Interventions included TCM HM formulas – Yiqi Huayu Recipe, Bailing Tablets, Shugan Xiaoyao Pill – and specific TCM treatments – Qi-Invigorating Phlegm and Blood Activating Therapy. These interventions were tested either as monotherapy against placebo or as adjuncts to standard care in follow-up (f/u) studies (Luo, 2024).

Across all studies (Luo, 2024), HM interventions were associated with substantial reds in TPOAb and TGAb compared with placebo. According to Bayesian surface-under-the-cumulative-ranking (SUCRA) results, Yiqi Huayu Recipe, Liqi Xiaoying Decoction, and Shugan Sanjie Therapy were among the top-ranked interventions for decreasing antibody titers – Yiqi Huayu Recipe achieved the greatest reds in both TPOAb and TGAb (Luo,

2024). Bailing Tablets were most effective in lowering TSH, while Shugan Xiaoying Decoction produced the largest increases in FT3 and FT4, suggesting improved thyroid hormone conversion and glandular recovery (Luo, 2024).

The diagnostic patterns – Qi-deficiency-based and Liver/Spleen deficiency formulas (Bailing Tablets, Shugan-Jianpi-Yangzue Medicine) produced slightly greater antibody red than general tonifying recipes (Luo, 2024). Studies that were longer than twelve wks showed more pronounced changes in antibody titers. In subclinical cases, effects were more significant than in overt hypothyroid presentations.

No serious adverse effects were reported across any of the 16 trials (Luo, 2024). A few ps experienced mild gastrointestinal symptoms nausea, diarrhea, or abdominal discomfort) in interventions such as Yiqi Yuying Decoction and Nigella sativa powder, but “no significant differences were observed between the treatment and cgrps” (Luo, 2024).

## 11.2 HM: NS

A 2016 RCT (2016) investigating the effects of NS (2 g/day) on thyroid function, serum Vascular Endothelial Growth Factor (VEGF) – 1, Nesfatin-1 and anthropometric features in patients with HT found that NS supplementation produced significant improvements. The RCT consisted of 40 adults (mean = 34.8 ± 8.4 yrs, 85% female, LT4 dosage ≈ 120 μg/day) with HT, randomized, double-blind, placebo-controlled trial (n=20 per grp) (Farhangi, 2016).

After 8 wks researchers measured significant reds in anthropometric changes: body weight (70.5 ± 12.3 → 69.4 ± 11.8 kg ($p$ = 0.004)), BMI (27.1 ± 4.6 → 26.6 ± 4.4 kg/m² ($p$ = 0.002)), waist circumference (88.6 ± 7.3 → 87.7 ± 6.9 cm ($p$ = 0.006)) (Farhangi, 2016). Thyroid function and antibody markers were also significantly improved: TSH decreased 6.42 ± 3.86 → 4.13 ± 2.35 mIU/L ($p$ = 0.03; between-grp ANCOVA $p$ = 0.02), T3 increased ( 0.92 ± 0.27 → 1.06 ± 0.34 mmol/L ($p$ = 0.008)), and anti-TPO antibodies decreased (294.6 ± 210.1 → 148.0 ± 158.3

IU/mL ($p$ = 0.019; between-grp $p$ = 0.01) (Farhangi, 2016). There was a significant red in VEGF in the NS grp (from 3521.1 ± 396.0 → 2100.2 ± 360.8 ng/L, $p$ = 0.02) (Farhangi, 2016).

Some adverse effects were recorded in three patients experiencing mild itching and nausea. None of the placebo grp were recorded to have significant change in any of the areas of interest.

## 11.3 TCM + Selenium

Table 2. Main Chinese medicine prescriptions for HT in human studies (Huang, 2024).

| Study | TCM Formula | Constituents | Study Design | Thyroid Function | Interventions (Sample Size) | Treatment Duration | TCM Effects | Potential Mechanisms |
|---|---|---|---|---|---|---|---|---|
| Wang (2023) | Fuzheng-Jiedu-Xiaoying decoction | Astragalus membranaceus, pangolin, Lonicera japonica, Prunella, Angelica sinensis, Forsythia suspensa, Scutellaria barbata, Buthus martensii karsch, Trionyx sinensis wiegmann, Glycyrrhiza uralensis | Randomized, controlled (rc) / TCM (n = 30) vs. Selenium (n = 30) | — | TCM (n = 30) vs. Selenium (n = 30) | 12 wks | TPOAb↓, TGAb↓, FT3↑, FT4↑, TSH↓, TCM syndrome score↓, total effective rate↑, thyroid volume↓ | Treg ratio↑, Th17 ratio↓, Th17/Treg ratio↓, IL-17↓, IL-6↓ |
| Chen (2019) | Jianpi-Xiaoying decoction | Astragalus membranaceus, Atractylodes macrocephala, Codonopsis pilosula, Poria cocos, Curcuma phaeocaulis, Sinapis alba, Arctium lappa, Prunella, Hedyotis diffusa, Euphorbia humifusa, Cyperus rotundus, Epimedium brevicornu, Ganoderma lucidum, | Rc / TCM (n = 40) vs. Selenium (n = 40) | — | TCM (n = 40) vs. Selenium (n = 40) | 12 wks | TPOAb↓, TGAb↓, TCM syndrome score↓, total effective rate↑ | IFN-γ↓, IL-4/IFN-γ |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Glycyrrhiza uralensis | | | | | | |
| Zhao (2023) | Qijian-Goiter-eliminating decoction | Astragalus membranaceus, Euonymus alatus, Dioscorea nipponica makino, Paeonia ostii | Rc | Euthyroid | TCM (n = 30) vs. Selenium (n = 30) | 12 wks | TPOAb↓, TGAb↓, thyroid volume↓, TCM syndrome score↓, total effective rate↑ | MDA↓, SOD↑, GPx↑, TAC↑, IL-1β↓, IL-18↓ |
| Zhang (2018) | Qiaojiafang granule | Astragalus membranaceus, Prunella, Atractylodes macrocephala, Forsythia suspensa, Rehmannia, Cyperus rotundus | Rc | Euthyroid | TCM (n = 35) vs. Selenium (n = 35) | 12 wks | TPOAb↓, TGAb↓ | — |
| Zhou (2014) | Shugan Sanjie formula | Bupleurum, Cyperus rotundus, Prunella, Fritillaria, Paeonia ostii, Glycyrrhiza uralensis | Rc | Euthyroid | TCM (n = 60) vs. Placebo (n = 60) | 12 wks | TPOAb↓, TGAb↓, FT3↑, FT4↑, TSH↓, syndrome score↓, total effective rate↑, thyroid volume↓ | — |
| Yu (2022) | Jieyu-Xiaoying decoction | Dioscorea nipponica makino, Ostrea gigas, Hedyotis diffusa, Bupleurum, Angelica sinensis, Paeonia ostii, Dioscorea opposita, Cyperus rotundus, Atractylodes macrocephala, Poria cocos, Scutellaria barbata, Pseudostellaria heterophylla, Sparganium stoloniferum, Curcuma phaeocaulis, Scutellaria baicalensis, Pinellia ternata, Fritillaria thunbergii | Rc / TCM + Selenium (n = 47) vs. Selenium (n = 47) | — | TCM + Selenium (n = 47) vs. Selenium (n = 47) | 12 wks | TPOAb↓, TGAb↓, TSH↓, thyroid volume↓, TCM syndrome score↓, total effective rate↑ | IFN-γ↓, IL-17↓, IL-10↑, IL-35↑ |

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| Yin (2018) | Jinkui-Shenqi pill | Rehmannia, Dioscorea opposita, Cornus officinalis, Poria cocos, Moutan cortex, Alisma orientale, Cinnamomum cassia, Aconitum carmichaelii, Achyranthes bidentata, Plantago asiatica | Controlled | Hypothyroid | TCM + L-T4 (n = 30) vs. L-T4 (n = 34) | 12 wks | TPOAb↓, TGAb↓, TSH↓, total effective rate↑ | — |
| Meng (2022) | Bupleurum Inula Flower Soup | Bupleurum, Paeonia ostii, Pinellia, Fritillaria, Prunella, Cyperus rotundus, Codonopsis, Inula | Rc | Hypothyroid | TCM + L-T4 (n = 24) vs. Placebo + L-T4 (n = 24) | 8 wks | TPOAb↓, TGAb↓, TSH↓, thyroid volume↓, HRQoL score↑ | — |
| Sun (2016) | Jianggui-Yiying decoction | Zingiber officinale, Cinnamomum cassia, Rehmannia, Dioscorea opposita, Poria cocos, Alisma orientale, Prunella, Scrophularia ningpoensis, Astragalus membranaceus, Atractylodes macrocephala, Angelica sinensis, Ligusticum chuanxiong, Citrus reticulata | Rc | Hypothyroid | TCM + L-T4 (n = 30) vs. L-T4 (n = 30) | 12 wks | TPOAb↓, TGAb↓, FT3↑, FT4↑, TSH↓, syndrome score↓ | — |
| Chen (2019) | Modified Shenling-Baizhu San | Panax ginseng, Atractylodes macrocephala, Poria cocos, Glycyrrhiza uralensis, Dolichos lablab, Dioscorea opposita, Coix lacryma-jobi, Nelumbo nucifera, Amomum villosum, Platycodon grandiflorum, | Rc | Hypothyroid | TCM + L-T4 (n = 34) vs. L-T4 (n = 34) | 12 wks | TPOAb↓, TGAb↓, FT3↑, FT4↑, TSH↓, syndrome score↓, total effective rate↑ | — |

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| | | Scrophularia ningpoensis, Fritillaria thunbergii, Ostrea gigas, Prunella, Cremastra appendiculata | | | | | | |
| Shan (2021) | Shugan-Jianpi formula | Bupleurum, Atractylodes macrocephala, Astragalus membranaceus, Paeonia ostii, Prunella, Sparganium stoloniferum, Cyperus rotundus, Citrus reticulata, Glycyrrhiza uralensis | Rc | Hypothyroid | TCM + L-T4 (n = 41) vs. L-T4 (n = 41) | 4 wks | TPOAb↓, TGAb↓, FT3↑, FT4↑, TSH↓, syndrome score↓, total effective rate↑ | IFN-γ↓, TNF-α↓, IL-8↓, IL-6↓ |
| Liu (2021) | Lianyu-Xiaoying decoction | Bupleurum, Cyperus rotundus, Curcuma wenyujin, Paeonia ostii, Atractylodes macrocephala, Poria cocos, Pinellia ternata, Fritillaria thunbergii, Dioscorea nipponica, Hedyotis diffusa, Paris polyphylla, Scutellaria barbata, Glycyrrhiza uralensis | Rc | Euthyroid | TCM + Selenium (n = 44) vs. TCM (n = 44) vs. Selenium (n = 44) | 12 wks | TPOAb↓, TGAb↓ | IFN-γ↓, IL-17↓ |
| Geng (2022) | Qinggan-Sanjie-Xiaoying formula | Prunella, Platycodon grandiflorum, Paeonia ostii, Ostrea gigas, Astragalus membranaceus, Scutellaria baicalensis, Paeonia suffruticosa, Hyriopsis cumingii, Ranunculus ternatus, Bupleurum, Albizia julibrissin | Retrospective | Euthyroid | TCM + Iodine-restricted diet (n = 40) vs. TCM + Selenium + Iodine-restricted diet (n = 40) vs. Iodine-restricted diet (n = 38) | 12 wks | TPOAb↓, TGAb↓, syndrome score↓ | — |

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| Pu (2021) | Qiyu-Yiqi-Shugan recipe | Astragalus membranaceus, Cyperus rotundus, Curcuma wenyujin, Ganoderma lucidum, Hedyotis diffusa, Glycyrrhiza uralensis | Controlled | Euthyroid or Subclinical hypothyroidism | TCM + Selenium (n = 89) vs. TCM (n = 140) vs. Selenium (n = 110) | 8 wks | TPOAb↓, TGAb↓ | — |

Across several RCTs (Huang, 2024), TCM decoctions have demonstrated that they can effectively modulate thyroid autoimmunity and inflammatory responses in HT. In an RCT involving 72 ps, Fuzheng-Jiedu-Xiaoying Decoction (200 mL twice daily, 12 wk) in comparison to selenium supplementation (200 μg twice daily, 12 wks) significantly red TPOAb and TGAb levels while improving Treg/Th17 and alleviating clinical symptoms without adverse hepatic, renal or gastrointestinal effects (Huang, 2024). Similarly, an RCT of 80 patients treated with Jianpi-Xiaoying Decoction (200 mL twice daily, 12 wks) in comparison to selenium (100 μg twice daily, 12 wks) showed substantial red in TPOAb and TGAb and cytokines (IFN-γ, IL-4, IL-4/IFN-γ), as well as a normalization of Th1/Th2 cytokine ratios, indicating improved immunoregulation and decreased glandular inflammation (Huang, 2024).

Quijian-Goiter-Eliminating Decoction achieved comparable improvements in 60 ps, leading to decreased oxidative stress and inflammatory markers and increased endogenous antioxidant defenses (SOD, GPx, TAC) when compared with selenium supplementation (150 μg twice daily, 12 wks) (Huang, 2024). Combination regimens such as Jieyu-Xiaoying Decoction (150 mL twice daily) plus selenium (200 μg twice daily, 12 wks) resulted in lowered TSH, TPOAb, and TGAb levels, suggesting synergistic antioxidant and endocrine effects (Huang, 2024). Furthermore, formulas like Jinkui-Shenqi Pills (64 patients, 12 wks), Bupleurum Inula Flower Soup (30 patients), and Jianggui-Yiying Decoction (60 patients, 12 wks) demonstrated enhanced thyroid hormone recovery and antibody red when used alongside LT4 (Huang, 2024). Other prescriptions, including modified Shenling-Baizhu San and Shugan-Jianpi Formulas, yielded

similar improvements across thyroid and immune biomarkers (IFN-γ, TNF-α, IL-8, IL-6) (Huang, 2024).

A larger RCT (n=132) comparing Lianyu-Xiaoying Decoction with selenium supplementation found that both treatments significantly decreased thyroid antibodies and inflammatory cytokines, with the combined regimen producing the most pronounced benefit (Huang, 2024). Qinggan-Sanjie Xiaoying and Qiyu-Yiqi-Shugan Recipes demonstrated that integrative TCM-selenium protocols outperformed selenium monotherapy in improving thyroid autoimmunity and systemic inflammation (Huang, 2024).

These clinical trials had no serious adverse reactions reported. Mild to moderate gastrointestinal discomfort occasionally occurred with Prunella but were rarely reported and did not have statistical significance between treatment and cgrp. Collectively, these findings suggest that TCM-selenium combinations may yield synergistic antioxidant and endocrine effects that exceed the benefits of either treatment alone.

## 11.4 Acupuncture and Hormone Balance

Beyond pharmacological and herbal interventions, acupuncture has been studied for its role in modulating hormone balance and reproductive outcomes relevant to autoimmune thyroid disease.

A 2024 RCT conducted by Shanze et al. (2024) investigated acupuncture as a therapy for HT patients. Acupuncture was administered 2-3 times weekly for 16 wks, with a 16-week follow up (f/u), alongside LT4 treatment. The cgrp only received LT4 therapy. When compared with cgrp, the acupuncture group demonstrated significant reds in TGAb titers (Δ = −141.97 IU/mL; 95 % CI = −222.4 to −61.5; p = 0.011) which were sustained at week 24 (p = 0.0072) (Wang, 2024). No significant change was observed in TPOAb levels (p = 0.389) or TSH, FT3, FT4 (p > 0.05) (Wang, 2024). Quality of life measures improved ThyPRO-39 (thyroid-related quality of life

questionnaire) scores (−3.81 points; p < 0.001) and higher SF-36 (Short Form-36 global quality of life questionnaire) scores (+5.70 points; p = 0.005) (Wang, 2024). These persisted through 24 wks but diminished by week 32. Reported adverse effects were mild bruising and transient local discomfort (Wang, 2024).

A 2024 systematic review by Tian et al. (2024) identified 310 studies investigating acupuncture for infertility (14.6% male and 85.6% female), including 274 primary research articles, 7 systematic reviews and 29 case reports. The study focused predominantly on polycystic ovary syndrome (PCOS), ovulatory dysfunction, and luteinized unruptured follicle syndrome (LUFS). Research on male infertility was limited and remains in the preliminary phase (Tian, 2024).

Meta-analysis results provided evidence that acupuncture and with human chorionic gonadotropin (HCG) significantly improved pregnancy outcomes compared with HCG treatment (RR = 1.89, 95 % CI 1.47–2.42; 11 RCTs, n = 662), (RR = 2.33, 95 % CI 1.53–3.55; 4 RCTs, n = 259) (Tian, 2024). When compared with no treatment, acupuncture was associated with a higher pregnancy rate (RR = 22.12, 95 % CI 1.39–353.09; 1 RCT, n = 47) (Tian, 2024).

Similarly, a Cochrane et al. meta-analysis (2014) of 70 randomized trials evaluating acupuncture for premenstrual syndrome (PMS) found that acupuncture was superior to all control interventions (8 trials; pooled RR = 1.55, 95% CI 1.33–1.80; P < 0.00001), including progestin and/or anxiolytic therapies (4 trials; RR = 1.49, 95% CI 1.27–1.74; P < 0.00001), and more effective than sham acupuncture (2 trials; RR = 5.99, 95% CI 2.84–12.66; P < 0.00001).

## 11.5 Gluten free diets for HT Patients

In a 12-month controlled study by Pobłocki et al. (2021), 62 ps were divided into a gluten-free diet group (GFDG) and a cgrp. The mean age and BMI of ps were 36.9 ± 8.6 yrs and 25.3 ± 4.8

kg/m² (Pobłocki, 2021). Baseline values did not differ significantly between groups for FT3, FT4, TSH, anti-TPO, or anti-TG levels.

Although between-group differences were not statistically significant, within-group analyses of the gluten-free diet cohort showed progressive improvement in thyroid function markers over 12 months (mos). However, within-group analysis of the GFDG revealed a progressive decline in TSH and increases in FT4 concentrations over time, with statistically significant improvements at the 12-month endpoint ($p < 0.05$) (Pobłocki, 2021). Log-transformed data showed significant reds in anti-TPO after 3 mos and anti-TG after 3, 6, and 12 mos among GFD ps, while the cgrp demonstrated only a transient anti-TG red at 3 mos. No adverse effects from following a GFD were reported (Pobłocki, 2021).

Together, these results support a multifaceted approach to HT management. Herbal and selenium-based interventions appear to modulate immune and oxidative stress pathways, acupuncture demonstrates endocrine regulatory effects, and dietary modification may enhance hormone absorption and reduce inflammation. These converging findings form the foundation for the integrative model discussed below.

# 12. Discussion

This meta-analysis investigated whether TCM, HM, TS, and dietary changes can meaningfully improve HT beyond standard hormone replacement therapy. Collectively, these findings support the integration of these intervention strategies, which opens a door to a potential new health model for HT patients. Treatment effects were strongest in studies lasting longer than 12 weeks.

## 12.1 TCM-Formulated HM

Across the included RCTs, HM interventions produced measurable improvements in TGAb and TPOAb titers with minimal adverse effects. SUCRA rankings identified Yiqi Huayu Recipe, Liqi Xiaoying Decoction, and Shugan Sanjie Therapy as the top-performing formulas, with Yiqi Huayu Recipe showing the greatest reds in both TPOAb and TGAb. Diagnostic patterns: Qi-deficiency and Liver/Spleen deficiency formulas – such as Bailing Tablets and Shugan-Jianpi-Yangxue Medicine – produced slightly greater immune improvements than general tonifying recipes. Evidence suggests that tailored treatments may enhance therapeutic response.

No serious adverse events were reported across 16 trials. Mild gastrointestinal symptoms occasionally occurred with Yiqi Yuying Decoction and Nigella sativa. Overall, the safety outcomes support the integration of HM into long-term HT management.

## 12.2 TCM + Selenium

Another finding of this analysis was the consistently stronger effect of TCM-HM and selenium combination therapy compared with selenium alone. These effects were marked by reds in TPOAb and TGAb and normalization of key inflammatory pathways, including Th1/Th2 balance and Treg/Th17 ratios. Selenium provides antioxidant support while TCM HM formulas modulate cytokines and immune signaling, working together to maintain thyroid homeostasis. This pattern was consistent across euthyroid and hypothyroid patients.

## 12.3 NS

NS further supports this integrative framework. Clinical evidence shows that NS improves thyroid function, lowers anti-TPO antibodies, and produces metabolic benefits. The observed decrease in VEGF points to broader anti-inflammatory effects (Farhangi, 2016). Together, these findings

highlight NS as a promising adjunct for reducing oxidative stress and immune dysregulations in HT. Larger controlled trials are needed to expand upon these findings.

## 12.4 Acupuncture

Acupuncture demonstrated significant reds in TGAb and improvements in quality of life, with effects persisting for eight wks post-treatment (Wang, 2024). Although TPOAb and thyroid hormones did not significantly change, the TGAb response indicates measurable autoimmune modulation. Broader evidence from PMS and infertility research supports acupuncture's influence on neuroendocrine and immune pathways, offering biological plausibility for its use in HT. Further RCTs are needed to confirm these effects and delineate their relevance to thyroid-specific outcomes.

## 12.5 GFD

Implementation of a GFD produced reds in TSH and increases in FT4 indicating improved LT4 absorption and thyroid function (Pobłocki, 2021). Declines in anti-TPO and anti-TG levels suggest that gut-focused dietary changes may reduce immune activation. Given gluten's well-established role in increasing intestinal permeability, these results support the relevance of gut integrity in HT management. Longer-term studies are needed to determine whether GFDs can significantly improve HT symptoms.

## 12.6 Integrative Implications

Across this meta-analysis, a consistent pattern emerges: therapies that target immune balance, oxidative stress, and gut function produce measurable improvements in HT biomarkers and patient-reported outcomes. Ultimately, Western medicine when combined with TCM, HM, TS and

dietary changes yields a more comprehensive and effective approach. These findings advocate for a shift toward a more comprehensive treatment model that complements standard LT4 therapy and addresses the multifaceted nature of HT.

# 13. Conclusion

The motivation for investigating TCM and other complementary therapies lies in their potential to broaden the current medical framework for HT. In a healthcare system where many patients continue to face unresolved symptoms, a diminished quality of life, and limited treatment options, this pursuit reflects a growing effort to address unmet clinical needs through more integrative and patient-centered approaches.

HT requires heightened awareness and a more comprehensive understanding that extends beyond the traditional concept of thyroid hormone replacement therapy. According to the American Thyroid Association, in the United States, up to 13 million people have undiagnosed thyroid failure, an estimated 20 million have some form of thyroid disease, and up to 60 percent of those with thyroid disease are unaware of their condition. This is due to several factors, most of which stem from the unassuming symptoms of HT. Patients are often dismissed by medical professionals who are told their symptoms are merely due to "stress" or unrelated conditions. One of the reasons behind this trend of dismissal is the historical exclusion of women from medical research, which did not begin until the 1970s. This has created a gap in medical research and narrowed medical practitioners' perspectives on treatment plans. This has also left many women uninformed about their ability to manage their unique health.

A notable gap exists in medical and insurance interventions despite a growing body of scientific evidence supporting the use of TCM, HM, and TS in aiding those with autoimmune conditions. This expanding evidence base reflects a return to a traditional healing framework while also prompting us to acknowledge modern ecological determinants of health. Research

linking increased glyphosate exposure to thyroid dysfunction raises significant concerns about the impact of industrial agriculture on endocrine health.

This meta-analysis presents evidence-backed integrative strategies that can complement conventional LT4 and NDT by addressing the underlying pathogenesis of HT. Importantly, the interventions examined demonstrated strong safety profiles, with no serious adverse events reported. The findings of this paper also align with emerging evidence on shared autoimmune mechanisms, including the HLA and CTLA4 pathways, as well as comorbidities such as CD. Combined, this data supports a systems-based model that pairs hormone replacement with immune- and gut-focused therapies, nutrition, and mitigation of toxin exposure.

Important limitations remain in existing research: most trials are small, short, and occasionally methodologically heterogeneous. Future studies should prioritize well-designed, long-term RCTs and meta-analyses that further integrate insights into these proposed therapies and evaluate their durability and clinical impact over time.

Clinicians managing patients with HT or HT-like symptoms should begin by testing hormone levels to determine the specific stage they are in (thyrotoxicosis, euthyroid, and hypothyroidism). They should then test for micronutrient deficiencies and screen for CD. Based on the results, clinicians can introduce evidence-based dietary interventions, such as a GF or GFD with TS, and refer patients to trained TCM practitioners and nutritionists/dieticians who specialize in autoimmune care.

TCM practitioners should provide acupuncture treatments to promote endocrine and immune balance. They should then prescribe individualized HM formulations based on patient presentation, taking into account top-performing interventions such as Fuzheng-Jiedu-Xiaoying Decoction, Jianpi-Xiaoying Decoction, Yiqi Huayu Recipe, Liqi Xiaoying Decoction, and Shugan Sanjie Therapy. Specific TCM treatments, such as Qi-Invigorating Phlegm and Blood-Activating Therapy, should also be considered.

Nutritionists should design individualized GF or low-GF meal and TS plans that support micronutrient balance – particularly iodine, selenium, and vitamin D – and educate patients on the risks associated with both deficiencies and excessive intake of these nutrients.

Implementing this model can help bridge the gap between patient experience, clinical assessment, and the diagnosis of Hashimoto's thyroiditis. By promoting earlier screening and intervention, clinicians can identify autoimmune activity before irreversible thyroid damage occurs. This will reduce the risk of progression to surgical intervention or malignancy. Ultimately, this integrative approach supports improved clinical outcomes and enhances the quality of life for individuals living with HT.

# Acknowledgements

I want to thank the UNCA Undergraduate Research and Creative Activity Program for its publication support and the Health Sciences Department and Chartwell’s Scholarship Committee for funding this project. I would also like to thank Dr. Sarah Frate for her dedicated mentorship and guidance, which inspired my investigation into chronic illness and the potential of public health frameworks to reimagine healing and recovery. Her insight and encouragement have been instrumental to this research and my development as a scholar and a future health professional. I would also like to extend my gratitude to Dr. Margaret Steele, whose *Food is Medicine* course is where this project originally began. Thank you for igniting my passion for food, health, and community well-being. To my acupuncturist, Dr. Britta Memmsheimer, thank you for teaching me and showing me the true magic and wisdom that are the essence of Chinese Medicine. Last but not least, to my friends and family – near and far – thank you for listening to me talk endlessly about HT and TCM. Your support has not gone unnoticed – love you heaps.

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