Desiccated Thyroid Extract: Efficacy and Safety in Hypothyroidism

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The management of hypothyroidism primarily relies on levothyroxine monotherapy, yet a subset of patients reports persistent symptoms despite biochemical euthyroidism. This clinical dilemma often prompts exploration of alternative therapies, including desiccated thyroid extract (DTE). A recent case-based discussion at endo 2026 critically examined the evidence surrounding DTE, underscoring its historical context and contemporary application in specific patient populations.

KEY TAKEAWAYS

- The Pivot: DTE remains a treatment option for select hypothyroid patients, particularly those dissatisfied with levothyroxine monotherapy.
- The Data: Comparative studies indicate DTE may offer marginal improvements in patient satisfaction or weight, without clear superiority in thyroid hormone normalisation.
- The Action: Clinicians should consider DTE only after thorough evaluation of levothyroxine adherence, dosage optimisation, and exclusion of other causes for persistent symptoms.

Hypothyroidism, a common endocrine disorder, is characterised by insufficient thyroid hormone production, leading to a range of symptoms including fatigue, weight gain, and cold intolerance.1 Standard treatment involves daily oral administration of levothyroxine, a synthetic T4 preparation, which is converted to the active T3 hormone in peripheral tissues.2 This approach effectively normalises thyroid-stimulating hormone (TSH) levels and resolves symptoms in the majority of patients.3 However, a persistent clinical challenge involves patients who report ongoing symptoms despite achieving target TSH levels with levothyroxine monotherapy.4 This dissatisfaction has historically driven interest in desiccated thyroid extract (DTE), a natural product derived from porcine thyroid glands, containing both T4 and T3.5

Comparative Efficacy and Safety of Desiccated Thyroid Extract

The historical use of DTE predates the availability of synthetic thyroid hormones.6 Its re-emergence in clinical discussion stems from the hypothesis that the combination of T4 and T3, as found in DTE, might more closely mimic physiological thyroid hormone secretion compared to levothyroxine monotherapy.7 A randomised, double-blind, crossover study, for instance, compared DTE with levothyroxine in 70 hypothyroid patients.8 The primary endpoint was patient preference, with secondary endpoints including weight, thyroid-related quality of life, and neurocognitive function.8 The study reported that 49% of patients preferred DTE, 19% preferred levothyroxine, and 32% expressed no preference (P=0.01).8 Patients on DTE experienced a mean weight loss of 1.2 kg (P=0.04) compared to levothyroxine, with no significant differences in thyroid-related quality of life scores or neurocognitive parameters between the two treatments.8

Biochemical parameters, including TSH, free T4, and free T3, were maintained within the normal reference range for both treatment arms.8 However, patients receiving DTE typically exhibited lower free T4 levels and higher free T3 levels compared to those on levothyroxine, reflecting the T3 content of DTE.9 This shift in free T4/T3 ratio is a consistent observation in studies comparing DTE with levothyroxine.9 Concerns regarding DTE include the potential for supraphysiological T3 levels, particularly post-dose, which could theoretically increase the risk of cardiac arrhythmias or other thyrotoxic symptoms.10 The variability in hormone content between batches of DTE has also been a historical limitation, although manufacturers assert improved standardisation in contemporary preparations.11

Another randomised trial involving 150 patients with primary hypothyroidism compared DTE, levothyroxine, and a combination of levothyroxine and liothyronine (synthetic T3).12 After 12 months, patient satisfaction scores were numerically higher in the DTE group, but the difference did not reach statistical significance when compared to levothyroxine alone (P=0.07).12 The incidence of adverse events, including palpitations and anxiety, was comparable across all three groups, with no statistically significant increase in the DTE arm.12 This study also noted that patients on DTE required careful titration to avoid TSH suppression and maintain free T4 within the lower end of the reference range.12 The rationale for DTE use often centers on the premise that some individuals may have impaired peripheral conversion of T4 to T3, making a direct T3 component beneficial. This hypothesis, while biologically plausible, lacks definitive biomarker identification in routine clinical practice. The prevalence of hypothyroidism is substantial, affecting approximately 0.5-5% of the general population, with a higher incidence in women and older adults.1 While most respond well to levothyroxine, the subset of patients with persistent symptoms represents a significant clinical population.4

Limitations of existing research include the relatively small sample sizes of most comparative trials and their short duration.13 The subjective nature of patient preference and quality of life endpoints also introduces potential bias.13 Furthermore, the specific patient population that might benefit most from DTE remains ill-defined, with current evidence suggesting it is a minority of patients who do not achieve symptomatic relief with optimal levothyroxine therapy.14

Future research should focus on identifying biomarkers or genetic predispositions that predict a differential response to T4 monotherapy versus T4/T3 combination therapies, including DTE.15 The lack of long-term safety data for DTE, particularly concerning bone mineral density and cardiovascular outcomes, also represents a critical gap in the literature. Most studies have focused on short-to-medium term outcomes, typically less than one year.13

CLINICAL IMPLICATIONS

The persistent discussion surrounding desiccated thyroid extract (DTE) at conferences like endo 2026 highlights a fundamental tension in endocrinology: the gap between biochemical normalisation and patient-reported well-being. While levothyroxine remains the gold standard, the continued demand for DTE underscores that a subset of patients feels inadequately treated. Clinicians must first ensure optimal levothyroxine dosing, adherence, and exclude other causes for symptoms before considering DTE. Prescribing DTE without this due diligence risks substituting a well-understood, titratable therapy with one that has less robust evidence and potential for greater T3 fluctuations.

From an industry perspective, the market for DTE, while niche, persists. Manufacturers of DTE must continue to address concerns regarding batch-to-batch variability and provide clear data on the stability and precise hormone content of their products. The lack of large-scale, long-term outcome studies for DTE, particularly

regarding cardiovascular safety, means that it will likely remain a second-line or specialist-prescribed option. This limits its broader market penetration and keeps it outside the primary recommendations of major guideline bodies, which continue to advocate for levothyroxine as first-line therapy.

For patients, the allure of a 'natural' thyroid hormone replacement can be strong, particularly when synthetic options do not fully alleviate symptoms. However, patients must be counselled on the current evidence base, the potential for T3-related side effects, and the importance of regular monitoring. The decision to use DTE should be a shared one, based on a comprehensive understanding of its benefits and limitations, and ideally managed by an endocrinologist experienced in its use. Without clearer evidence of superior outcomes, DTE will continue to occupy a specific, rather than central, role in hypothyroidism management.

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