

## Use of Dessicated Thyroid Extracts: Time to Beef up the Evidence?

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Levothyroxine (T4) is the commonest treatment used to treat hypothyroidism to render patients clinically and biochemically euthyroid as recommended by the Royal College of Physicians [1] in the UK and many other guidelines. Whereas levothyroxine has a long half-life of one week, most liothyroxine (T3) is generated from de-iodination of circulating T4 - so in principle treatment with levothyroxine (T4) should provide enough T3 in physiological concentrations.

Although routine use of thyroid extract is not recommended by the Royal College of Physicians, the British Thyroid Association and the European Thyroid Association, practicing endocrinologists do encounter patients in clinical practice who do not seem to respond to levothyroxine.

Desiccated thyroid extracts are not licensed in the UK and although available in the US, they have not been approved by the US FDA due to lack of vigorous clinical trials evaluating clinical efficacy and safety. Desiccated thyroid extracts like Armour thyroid, NP thyroid and Nature Throid are derived from porcine thyroid glands and generally contain 38 mcg of T4 and 9 mcg of T3 per 65 mg of labelled thyroid gland [2-4]. Apart from the problem of not being licensed, there is also lack of consistent effect with these treatments. In addition, there do not seem to be enough randomised clinical trials about their long-term outcomes. To the contrary, there is thought to be an excessive risk of supra-physiological T3 levels during therapy with natural thyroid extracts causing symptoms including development of osteoporosis and arrhythmia [1,5-7]. Despite all these issues, there are a minority of patients who are not content with T4 therapy and request treatment with alternate treatment strategies including desiccated thyroid as they do not feel well on T4 treatment.

Given this dichotomy between the need in some patients for alternative treatment and at the same time lack of clear cut evidence with such treatments, is it not time to think of designing proper randomised control studies comparing synthetic levothyroxine with natural desiccated thyroid extracts? Over the years there have only been a few studies in this area with good quality evidence to support or refute the use of desiccated thyroid extract.

Studies have not only been few and far between but also vary in design, duration, size and outcomes. As far as we know, there is only one small randomised control cross over trial comparing the two treatments over a period of 16 weeks which showed no difference in general health in all patients evaluated with normal TSH levels. Patients who preferred desiccated thyroid (49%) tended to have greater weight loss and subjective improvement in symptoms of energy levels, memory and concentration [8]. Although it is difficult to generalise the benefits of desiccated thyroid treatment over levothyroxine, it is also

possible that there may be subtle improvements seen in some patients as noted in clinical practice from time to time. A study with proper sample size, longer duration with comparable groups is clinically required to clarify the efficacy and safety of desiccated thyroid extract.

There have also been a couple of retrospective reviews of desiccated thyroid showing improvement in symptoms but again there are questions about dose titration of thyroxine prior to switching to desiccated thyroid and also selection bias in these two studies [5,9,10].

Practising clinicians need to be absolutely sure where they stand with regards to prescribing desiccated thyroid extract given the fact that patients are much more aware of treatment strategies and do search the internet a lot more these days. As clinicians we also need to be able to provide them with robust evidence based answers that will help them both physically and psychologically adapt to treatments as recommended by most organisations.

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