

Poster presentation

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## The effect of donepezil on thyroid function in patients with Alzheimer's disease: implications on response

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### Background

A relationship between thyroid status and Alzheimer's disease (AD) has long been considered. Increasing evidence also supports an extensive inter-relationship between thyroid hormones and the cholinergic system which is selectively and early affected in AD. Cholinesterase inhibitors (ChEIs) are the current treatment (Rx) of choice for these patients. The aim of the present study was to explore the possibility of an interplay between the acetyl cholinesterase inhibitor (AChEI) donepezil and thyroid function in patients with AD.

### Materials and methods

Thyroid function tests (TFTs) were evaluated in 28 patients (9 men and 19 women; mean age  $74 \pm 7.2$  SD years), suffering from AD before and after four months on donepezil treatment. Serum thyrotropin (TSH), triiodothyronine (T3), thyroxine (T4), and the free fractions (fT4 and fT3) as well as thyroid autoantibodies (anti-TPO, anti-Tg) were determined using standard methods.

### Results

Significant reductions in T4, fT3, fT4 and anti TPO levels were observed post-treatment, with a corresponding slight increase of TSH. For fT4 and fT3 the reduction was exclusively derived from the responders to the donepezil treatment as compared to non-responders. Responders in general presented with higher serum concentration of T4 and fT4 (all within the normal range of variation). Serum levels in nonresponders remained unchanged.

### Discussion

Relatively higher serum concentration of T4 and fT4 followed by a post treatment decrease, may predict a favorable response to donepezil treatment. As thyroid hormones have been used to augment antidepressant effectiveness in refractory depression, the question arises as to whether small doses of T4 or T3 would have a possible beneficial effect in AD as well.