



Response to Letter to “Levothyroxine absorption test results in patients with TSH elevation resistant to treatment”

Ilgin Yildirim Simsir ¹ · Utku Erdem Soyaltin¹ · Ahmet Gokhan Ozgen¹

Received: 24 June 2021 / Accepted: 26 June 2021 / Published online: 1 September 2021
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2021

When we first started to use absorption test formula we found discrepancy in the results in Ching Sun et al.'s article [1]. We talked about this discrepancies with them and we started to apply relative delta formula in test: baseline free T4 (fT4) level obtained before ingestion of 1000 mcg LT4 in all patient, after ingestion hourly blood samples were taken for calculate fT4 level for five hours. Absorption rate was calculated with $[(\text{peak fT4} - \text{baseline fT4}) / \text{peak fT4}] \times \text{vd}$ formula.

After applying this formula, all the results in our and Ching Sun's article became consistent to exclude LT4 malabsorption. We applied new formula to our new patients and found the accuracy of formula, we want to share our new case series in 2022. But in our article patient two and five's absorption test misspelled at the time of writing: patients two's absorption rate was 36% and patient five's absorption rate was 97%.

According to new formula, patient one and two had LT4 malabsorption. TSH level did not normalized with high

dose LT4 and adding T3 preparation to LT4. Their TSH level normalized with weekly intravenous LT4 administration. The other patients TSH level normalized with strict drug compliance. These results and observations also clues the new formula's accuracy.

Compliance with ethical standards

Conflict of interest The authors declare no competing interests.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Reference

1. G.E. Ching Sun, K.M. Pantalone, C. Faiman, M. Gupta, L. Olansky, B. Hatipoglu, The clinical utility of free thyroxine in oral levothyroxine absorption testing. *Endocr. Pract.* **20**, 925–929 (2014). <https://doi.org/10.4158/EP13487.OR>. Sep

✉ Ilgin Yildirim Simsir
ilginyildirim@hotmail.com

¹ Ege University Faculty of Medicine, Endocrinology and Metabolism Disorders, Izmir, Turkey