



Probable interaction between levothyroxine sodium and thyme (*Thymus vulgaris*), about a case report

[Interacción probable entre levotiroxina sódica y tomillo (*Thymus vulgaris*), sobre un reporte de caso]

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Abstract

Thyme (*Thymus vulgaris*) is often used thanks to its anti-infectious properties to treat seasonal influenza. Some patients use it in conjunction with their conventional treatment, which can expose them to adverse effects or interactions. A case of probable pharmacokinetic interaction of levothyroxine and thyme is described. This is a case of 52-year-old woman admitted to the toxicology department in January 2024 after a phytovigilance questionnaire. The patient had a treatment for hypothyroidism consisting in levothyroxine sodium with a daily dose of 150 µg, but she showed palpitations following the taking of a *T. vulgaris* tea to treat her seasonal flu. She reported that the symptoms disappeared by reducing the doses of *T. vulgaris*. The score of the probability scale of the interaction was 6, so a probable interaction may occur in patients with thyroid disorders and taking levothyroxine sodium concomitantly with *T. vulgaris*.

Keywords: herbal-drug interaction; hypothyroidism; levothyroxine; thyme.

Resumen

El tomillo (*Thymus vulgaris*) se utiliza a menudo gracias a sus propiedades antiinfecciosas para tratar la gripe estacional. Algunos pacientes lo utilizan junto con su tratamiento convencional, lo que puede exponerlos a efectos adversos o interacciones. Se describe un caso de probable interacción farmacocinética de levotiroxina y tomillo. Se trata de una mujer de 52 años ingresada en el servicio de toxicología en enero de 2024 tras un cuestionario de fitovigilancia. La paciente tenía un tratamiento para el hipotiroidismo consistente en levotiroxina sódica con una dosis diaria de 150 µg, pero presentó palpitaciones tras la toma de una infusión de *T. vulgaris* para tratar su gripe estacional. Informó de que los síntomas desaparecieron al reducir las dosis de *T. vulgaris*. La puntuación de la escala de probabilidad de la interacción fue de 6, por lo que puede producirse una interacción probable en pacientes con trastornos tiroideos y que toman levotiroxina sódica concomitantemente con *T. vulgaris*.

Palabras Clave: hipotiroidismo; interacción hierba-fármaco; levotiroxina; tomillo.

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INTRODUCTION

Traditional medicine and the use of medicinal plants are part of the culture of the Mediterranean population (Hamliche and Maiza, 2006). Thyme (*Thymus vulgaris*) is often used thanks to its anti-infectious properties to treat seasonal influenza (Hamliche and Maiza, 2006). Convinced of its safety, some patients use it in conjunction with their conventional treatment, which can expose them to adverse effects or interactions.

CASE HISTORY

A case of probable pharmacokinetic interaction of levothyroxine and thyme is described. This is a 52-year-old woman admitted to the toxicology department in January 2024 after a phytovigilance questionnaire. The patient was admitted by endocrinology for

hypothyroidism. She took levothyroxine sodium with a daily dose of 150 µg. The reason for our intervention was palpitations following the taking of a *T. vulgaris* tea to treat her seasonal flu. She brewed it (a handful per cup) once a day for three days. The patient reported that her flu was cured but each time she took this herbal tea, she suffered palpitation, and occurred two days after taking it. She also stated that she was taking thyme tea during her conventional treatment. Also, she reported that the symptoms disappeared by reducing the doses of *T. vulgaris* (see Table 1).

DISCUSSION

Heart rhythm disorders are one of the side effects related to the overdose of levothyroxine (Roguet, 2016). It is mentioned that they occur two to three days after the overdose, which coincides with the reported effect.

Table 1. Chronology of the occurrence of the adverse reaction.

Chronology of effects	Medication and analyses	Observations
History of thyroid carcinoma in remission Hypothyroidism	Levothyroxine sodium: daily dose: 200 µg.	Tiredness, shortness of breath, sweat.
Palpitation, tachycardia confirmed by electrocardiogram, hypertension, especially systolic (90-95 mm Hg)	- Antiarrhythmic (hawthorn extract, 1 tablet per day) and anti-hypertensive (Lopressor 100 mg, half tablet per day). - Decrease doses of levothyroxine sodium by 175 µg every other day and then 150 µg per day (dosage adjustment).	Patient stabilization, no adverse effects.
Taking <i>T. vulgaris</i> during a flu	Levothyroxine sodium 150 µg daily	Tachycardia was confirmed by an electrocardiogram two days after taking <i>T. vulgaris</i> .
Stopping the intake of <i>T. vulgaris</i>	Levothyroxine sodium 150 µg daily	Disappearance of effects after 4 days.
Reintroduction of <i>T. vulgaris</i>	Levothyroxine sodium 150 µg daily	Reappearance of tachycardia two days after taking.
Stopping the intake of <i>T. vulgaris</i>	Levothyroxine sodium 150 µg daily	Disappearance of effects 3-4 days after discontinuation.
Taking of Thyme during flu, brewed by reducing the usual doses	Levothyroxine Sodium 150 µg daily	No side effects

Pharmacokinetically, glycoprotein P (P-gp) is involved in levothyroxine sodium metabolism (Ghorbanzadeh et al., 2022). According to one study, carvacrol, a component of *T. vulgaris*, has been shown to inhibit P-gp (Abas, 2002; Ghorbanzadeh et al., 2022). Inhibition of this protein leads to increased plasma levels of the drug (Quest, 2008), which leads us to the interaction hypothesis. In the literature, one study reported palpitations in patients with thyroid disorders and using *T. vulgaris* (Quest, 2008), but no study reported interaction with sufficiently demonstrated clinical data.

The score of the probability scale of the interaction was 6, so a probable interaction may occur in patients with thyroid disorders and taking levothyroxine sodium concomitantly with *T. vulgaris*.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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AUTHOR CONTRIBUTION:

Contribution	Elyebdri N	Baba Ahmed S	Abourejal N	Loudjedi L	Bououden A	Khelil NEH
Concepts or ideas	x					
Design	x					
Experimental studies	x	x				
Data acquisition		x		x	x	x
Data analysis		x	x		x	
Manuscript preparation	x					
Manuscript editing	x					
Manuscript review	x	x	x	x	x	x

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