ISRCTN12149022 https://doi.org/10.1186/ISRCTN12149022

Absorption of levothyroxine with breakfast in healthy women

Submission date	Recruitment status	[ ] Prospectively registered
23/01/2015	No longer recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
30/01/2015	Completed	[ ] Results
Last Edited	**Condition category**	[ ] Individual participant data
26/01/2017	Other	[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Levothyroxine is a synthetic thyroid hormone that is normally used to substitute the natural hormone when the thyroid, for several reasons, does not produce this hormone at all or does not produce it in sufficient amounts. The absorption of levothyroxine is affected by the intake of food and the recommendation is to take it in the fasting state and wait between 30 min and 1 hour before having breakfast. Exactly how long one should wait before the meal and whether different formulations require different fasting times have not been investigated. The aim in this study is to compare the absorption profile of oral levothyroxine administered at a single dose in healthy volunteers at different times before breakfast.

Who can participate?
Women, aged 18–50 years old, who are generally healthy

What does the study involve?
Healthy volunteers will be randomly allocated to oral levothyroxine as a single dose (600 µg) at different times: they will take two or three single doses of levothyroxine in the fasting state or 15 minutes and/or 30 minutes before a light breakfast.

What are the possible benefits and risks of participating?
Levothyroxine is usually well tolerated, although, in the event of hyperdosing, symptoms may occur such as palpitations, alterations of the cardiac rhythm, increased heart rate frequency, muscular cramps, insomnia, diarrhoea, vomiting, nervousness, headache, sweating, weight decrease, tremors, alterations of the menstrual cycle or loss of hair. There are no direct benefits from the participation.

Where is the study run from?
Cross Research SA (Switzerland)

When is the study starting and how long is it expected to run for?
From January 2015 to September 2015

Who is funding the study?
IBSA Institut Biochimique SA (Switzerland)

Who is the main contact?
Mrs Claudia Scarsi

Contact information

Type(s)
Scientific

Contact name
Mrs Claudia Scarsi

Contact details
Via del Piano
Pambio-Noranco
Switzerland
6915

Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
14CH/T412

Study information

Scientific Title
Effect of food on levothyroxine absorption following a single oral dose of 600 µg in healthy women: an randomised open-label pilot study

Study objectives
To verifiy the absorption of levothyroxine after meals.

On 30/06/2015 the following changes were made to the trial record:
1. The overall trial end date was changed from 30/05/2015 to 30/09/2015.
2. The target number of participants was changed from 30 to 40.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Comitato Etico Cantonale (Switzerland), 20/01/2015 (amendment n. 2 21/04/2015), reference number: 2871

Study design
Randomised open-label three-way bioavailability pilot study in two parts

Primary study design
Interventional

Secondary study design
Randomised parallel trial

Study setting(s)
Other

Study type(s)
Other

Participant information sheet

Health condition(s) or problem(s) studied
Oral levothyroxine

Interventions
Healthy volunteers were administered oral levothyroxine as a single dose (600 mcg):
1. In the fasting state
2. 15 minutes before a light breakfast
3. 30 minutes before a light breakfast

Intervention Type
Drug

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Levothyroxine

Primary outcome measure
Effect of food on levothyroxine sodium bioavailability by comparison of the rate (Cmax) and extent (AUC0-t) of absorption of serum levothyroxine after a single dose of 600 µg: measured over 24 hours after each single dose, by repeated blood sampling and analytical quantitation of the serum concentration of levothyroxine

Secondary outcome measures
Effect of food on the secondary levothyroxine pharmacokinetic parameters after a single dose of 600 µg: measured over 24 hours after each single dose, by repeated blood sampling and analytical quantitation of the serum concentration of levothyroxine

Overall study start date
28/11/2014

Completion date

08/11/2016

Eligibility

Key inclusion criteria
1. Signed written informed consent before inclusion in the study
2. Age 18–50 years old
3. Body-mass index: 18.5–27 kg/m2
4. Vital signs: systolic blood pressure 100–139 mmHg, diastolic blood pressure 50–89 mmHg, heart rate 50–90 beats per minute, measured after 5 minutes at rest in the sitting position
5. Ability to comprehend the full nature and purpose of the study, including possible risks and side effects; ability to co-operate with the investigator and comply with the requirements of the entire study
6. Women of child-bearing potential must be using at least one of the following reliable methods of contraception and must continue up to 30 days after the last investigational medicinal product administration: 6.1. Hormonal oral, implantable, transdermal, or injectable contraceptives for at least 2 months before the screening visit
6.2. Non-hormonal intrauterine device or female condom with spermicide or contraceptive sponge with spermicide or diaphragm with spermicide or cervical cap with spermicide for at least 2 months before the screening visit
6.3. Male sexual partner who agrees to use a male condom with spermicide
6.4. Sterile sexual partner
6.5. Non-child-bearing potential or in post-menopausal status for at least 1 year
7. All thyroid function tests within normal limits

Participant type(s)
Healthy volunteer

Age group
Adult

Lower age limit
18 Years

Sex
Female

Target number of participants
40

Key exclusion criteria
1. Electrocardiogram 12-leads (supine position): clinically significant abnormalities
2. Physical findings: clinically significant abnormal physical findings that could interfere with the objectives of the study
3. Laboratory analyses: clinically significant abnormal laboratory values indicative of physical illness
4. Allergy: ascertained or presumptive hypersensitivity to the active principle and/or formulations' ingredients; history of anaphylaxis to drugs or allergic reactions in general, which the investigator considers may affect the outcome of the study
5. Diseases: significant history of renal, hepatic, gastrointestinal, cardiovascular (including active arrhythmia or history of arrhythmia, particularly atrial fibrillation), respiratory, skin,

haematological, genitourinary or neurological diseases that may interfere with the aim of the study; history of endocrine abnormalities, particularly thyroid, hypophysis and hypothalamus dysfunction; autoimmune diseases such as Basedow-Graves and Hashimoto morbi; neoplasia
6. Medications, including over the counter drugs and herbal remedies for 2 weeks before the start of the study
7. Investigative drug studies: participation in the evaluation of any investigational product for 3 months before this study; the 3-month interval is calculated as the time between the first calendar day of the month that follows the last visit of the previous study and the first day of the present study
8. Blood donations for 3 months before this study
9. Drug, alcohol, caffeine, tobacco: history of drug, alcohol (more than one drink per day defined according to the USDA Dietary Guidelines 2010), caffeine (more than five cups of coffee or tea per day) or tobacco abuse (at least 10 cigarettes per day)
10. Positive drug test results at screening or day–1
11. Positive alcohol breath test at day –1
12. Abnormal diets (<1600 or >3500 kcal/day) or substantial changes in eating habits in the 4 weeks before this study
13. Vegetarians
14. Positive or missing pregnancy test at screening or day–1
15. Pregnant or lactating women

Date of first enrolment
26/01/2015

Date of final enrolment
09/06/2015

Locations

Countries of recruitment
Switzerland

Study participating centre
Cross Research SA
Switzerland
6894

Sponsor information

Organisation
IBSA Institut Biochimique SA

Sponsor details

Via del Piano
Pambio-Noranco
Switzerland
6915

Sponsor type
Industry

ROR
https://ror.org/051tj3a26

Funder(s)

Funder type
Industry

Funder Name
IBSA Institut Biochimique SA (Switzerland)

Results and Publications

Publication and dissemination plan
Planned publication in a high-impact peer reviewed journal

Intention to publish date
08/11/2018

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Claudia Scarsi (Claudia.scarsi@ibsa.ch)

IPD sharing plan summary
Available on request