ISRCTN14115156 https://doi.org/10.1186/ISRCTN14115156

Does taking Impryl (a supplement containing vitamins and micronutrients) reduce levels of homocysteine (a marker of abnormal metabolism) and normalise levels of hormones involved in fertility in women with polycystic ovary syndrome (PCOS)?

Submission date
23/09/2019

Recruitment status
No longer recruiting

Registration date
02/10/2019

Overall study status
Completed

Last Edited
15/08/2022

Condition category
Nutritional, Metabolic, Endocrine

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Polycystic ovary syndrome (PCOS) is a condition affecting hormone levels in women. Common symptoms include irregular periods, weight gain and excess hair growth. It is currently not known what causes PCOS, but it is associated with high levels of insulin (the hormone that controls sugar levels in the blood) and insulin resistance (where the body does not respond correctly to insulin).
Homocysteine is an amino acid (a component of proteins) that is normally found in the human body, but is increased in many women with PCOS. Increased homocysteine levels are also involved in several other conditions that can be associated with PCOS including cardiovascular disease and infertility. People with high homocysteine levels can be prescribed folic acid to reduce it. However, folic acid only stimulates one pathway to reduce homocysteine levels and needs to be give at high doses, which can cause side effects. This study aims to investigate whether a supplement containing a mixture of vitamins, zinc and other micronutrients that can activate multiple pathways to reduce homocysteine levels is effective in reducing homocysteine levels

Who can participate?
Women aged over 18 years with PCOS

What does the study involve?
Participants will be randomly allocated into one of two groups. One group will receive no treatment. The other group will take the one tablet of the supplement every day for 3 months and will be asked whether they took the tablets as instructed at the end of the 3 months. All women participating in the study have a blood sample taken at the time of enrolment and again

at the end of a 3-month period. The blood sample will be used to run tests that are usually performed as part of the standard follow-up of PCOS patients. Only homocysteine level, which is not routinely tested in all PCOS patients, will be an additional test. However it will be tested on the same blood sample used for the other tests and will not cause additional burden on the patient.

What are the possible benefits and risks of participating?
The risk from study participation is minimal because it involves no additional blood-taking and because the supplement in use is considered safe according to the current EU regulations. The supplement contains micronutrients that are already part of a balanced diet at similar amounts. These micronutrients include B vitamins (B2, B3, B6 and B12), folates (in the activated form of methylfolate), betaine, cystine and zinc. None of these micronutrients are known to cause allergies, furthermore the product is certified as lactose-free and gluten-free.
Participants taking the supplement might benefit from improvements in their PCOS symptoms.

Where is the study run from?
Azienda Ospedaliera Universitaria di Perugia (Italy)

When is the study starting and how long is it expected to run for?
March 2017 to December 2018

Who is funding the study?
The University of Perugia (Italy). In addition, the company that makes the Impryl supplement (Parthenogen, Switzerland) has provided the supplement to supply the study.

Who is the main contact?
Professor Sandro Gerli, sandro.gerli@unipg.it

Contact information

Type(s)
Public

Contact name
Prof Sandro Gerli

ORCID ID
https://orcid.org/0000-0003-1082-3062

Contact details
Corso Cavour 172
Perugia
Italy
06121
+39 368434624
sandro.gerli@unipg.it

Additional identifiers

Clinical Trials Information System (CTIS)

Nil known

Protocol serial number
MED40-2016-01

Study information

Scientific Title
Micronutrients in support to the one carbon cycle for the modulation of blood fasting homocysteine in PCOS women

Acronym
MIC-PCOS

Study objectives
The present study was intended to test the opportunity to achieve a better effective reduction of homocysteine in PCOS women by means of a wider array of the concerned micronutrients supporting all concerned pathways.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 09/02/2017, Comitato Etico Azienda Sanitarie (CEAS) dell'Umbria (Via della Rivoluzione, 16
06070 Ellera di Corciano, Perugia, Umbria, Italy; +39 075 5170199; segreteria@ceasumbria.it), ref: 2846/16

Study design
Prospective, single-centre, randomized, parallel group, open label, controlled versus no treatment clinical study.

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Polycystic ovary syndrome

Interventions
Randomization according to a computer generated list for treatment with the test product or no treatment with a 2:1 ratio to receive the supplement or no treatment for 3 months.
The GMP-manufactured dietary supplement (Impryl, Parthenogen, Switzerland) is in the form of a tablet weighing 1.3 g containing the following nutrients: Betaine 200 mg, L-cystine 200 mg, niacin 16 mg, zinc 10 mg, vitamin B6 1.4 mg, riboflavin 1.4 mg, folic acid (as methylfolate) 400 microg, vitamin B12 (methylcobalamin) 2.5 µg. Participants will take one tablet per day.

Intervention Type

Supplement

Primary outcome(s)
Fasting blood homocysteine measured using chemiluminescence before treatment and at the end of the 3-month follow-up

Key secondary outcome(s))
1. Anti-Mullerian hormone (AMH) measured using ELISA before treatment and at the end of the 3-month follow-up
2. Testosterone measured using an automated immunoassay system before treatment and at the end of the 3-month follow-up
3. Sex hormone-binding globulins (SHBGs) measured using radioimmunoassay (RIA) before treatment and at the end of the 3-month follow-up
4. Free testosterone index (FTI) was calculated using the testosterone and SHGB data before treatment and at the end of the 3-month follow-up

Completion date
12/12/2018

Eligibility

Key inclusion criteria
1. Women referred for gynaecological problems and diagnosed as affected by PCOS according to Rotterdam criteria [Hum Reprod 2004]
2. Aged over 18 years

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
Female

Total final enrolment
32

Key exclusion criteria
1. Ongoing pregnancy
2. Ongoing pharmacological treatment (oral antidiabetic drugs, insulin, antihypertensives, any hormone)
3. Ongoing systemic or endocrine diseases, including hypertension and thyroid diseases

Date of first enrolment
03/06/2017

Date of final enrolment
28/10/2018

Locations

Countries of recruitment
Italy

Study participating centre
Sandro Gerli
Corso Cavour 172
Perugia
Italy
06121

Sponsor information

Organisation
University of Perugia

ROR
https://ror.org/00x27da85

Funder(s)

Funder type
University/education

Funder Name
Università degli Studi di Perugia

Alternative Name(s)
University of Perugia, Universidad degli Studi de Perusa

Funding Body Type
Government organisation

Funding Body Subtype
Local government

Location
Italy

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during this study will be included in the subsequent results publication.

IPD sharing plan summary
Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/06/2020	03/04/2020	Yes	No
Protocol file	version 2.1	01/07/2016	15/08/2022	No	No