

The effect of phenolic content of olive oil on ischaemic reactive hyperaemia in pre-hypertensive subjects

Submission date 18/01/2010	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered
		<input type="checkbox"/> Protocol
Registration date 02/02/2010	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan
		<input checked="" type="checkbox"/> Results
Last Edited 26/08/2014	Condition category Circulatory System	<input type="checkbox"/> Individual participant data

Plain English summary of protocol

Not provided at time of registration

Contact information

Type(s)

Scientific

Contact name

Prof Rosa Sola

Contact details

C/ Sant Llorenç, 21
Reus
Spain
43201

Additional identifiers

Study information

Scientific Title

Effects of virgin olive oil enriched with phenolic compounds on blood pressure and endothelial function: a randomised double-blind crossover controlled trial

Acronym

OLIPA study

Study objectives

Increased antioxidant capacity exerted by phenolic compounds improved endothelial function leading to reduced blood pressure in postprandial state.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Local medical ethics committee (Comité d'Ètica d'Investigació Clínica Hospital Universitari Sant Joan, Reus) approved, 24/04/2008, ref: 08-04-24/4proj5

Study design

Randomised double-blind crossover controlled trial

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Ischaemic reactive hyperaemia/blood pressure

Interventions

All participants will follow a stabilisation period of 1 week with a low saturated fat diet. The day before to the postprandial test was followed by a polyphenol-free diet. Participants will be randomised individually between two postprandial tests:

1. Virgin olive oil. This will have a polyphenol content of 332.63 mg/kg (or 332.63 ppm measured by HPLC-DAD), an amount similar to oils in the area.
2. Virgin olive oil enriched with polyphenols. This will be enriched with polyphenols from defatted olive paste, which increase the concentrations up to three times, reaching a total content of 1008.14 mg/kg (or 1008.14 ppm measured by HPLC-DAD). These oils are prepared by the research group from Universitat de Lleida.

Participants will be provided with 80 g of bread containing 30 ml of the oil they have been allocated to. For 300 minutes after ingestion, participants will rest and may only drink water. One week later, participants will take the other investigational product in the same manner as before.

Diet monitoring will be conducted through a 3-day dietary record, in weeks 1 and 2. Participants are advised to maintain their usual physical activity and are monitored by a physical activity questionnaire.

Intervention Type

Drug

Phase

Not Applicable

Drug/device/biological/vaccine name(s)

Virgin olive oil enriched with phenolic compounds

Primary outcome(s)

1. Blood pressure, measured at baseline and 120, 240 and 300 minutes on each study day
2. Endothelial function and activation biomarkers, measured at baseline and 120, 240 and 300 minutes on each study day

Key secondary outcome(s)

Difference between the two oils (from baseline to 120, 240 and 300 minutes) of the following parameters:

1. The concentration of phenolic compounds in plasma, up to 300 minutes
2. Lipoproteins (total cholesterol, low density lipoprotein [LDL] cholesterol, high density lipoprotein [HDL] cholesterol, triglycerides) and apolipoproteins A1 and B100
3. Liver function tests
4. Angiotensin converting enzymes (ACE) inhibitory activity
5. Biomarkers of oxidation (LDL oxidised lipoperoxides, 8-epi-prostaglandin F2)
6. Biomarkers of inflammation (interleukin 6, high sensitivity C-reactive protein [hsCRP])
7. Antithrombotic activity biomarkers (plasminogen activator inhibitor-1 [PAI-1], factor VII antigen [FVIIag], activated factor VII [FVIIa])
8. Endothelial activation biomarkers (vascular cell adhesion molecules [VCAMs], intercellular adhesion molecules [ICAMs], e-selectin)
9. The relationship between nitrate (NO₃)/nitrite (NO₂)
10. Glycaemia and insulin resistance by Homeostatic Model Assessment (HOMA) index
11. The genetic profile of genes involved in endothelial function and blood pressure

Completion date

31/03/2010

Eligibility

Key inclusion criteria

1. Healthy volunteers aged 18 to 75 years, either sex
2. Systolic blood pressure levels upper or equal 120 to 159 mmHg and/or diastolic blood pressure upper or equal 80 to 99 mmHg without antihypertensive treatment

Participant type(s)

Healthy volunteer

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Sex

All

Key exclusion criteria

1. Low density lipoprotein cholesterol (LDL-c) levels upper 189 mg/dL
2. Triglycerides upper 350 mg/dL (the threshold level to determine LDL-c by the Friedewald formula)
3. Chronic alcoholism
4. Body mass index (BMI) upper 30 kg/m²
5. Statin treatment prior to initiating the trial and would not have left at least 2 months before starting the study
6. Antihypertensive treatment prior to initiating the trial and would not have left at least 2 months before starting the study
7. Having diabetes mellitus (if you develop a blood glucose, fasting, upper 126 mg/dL, should be repeated and confirmed)
8. Renal disease (plasma creatinine levels upper 1.4 mg/dL for women and upper 1.5 mg/dL for men)
9. Having acute infectious diseases, malignancies, severe liver insufficiency, chronic respiratory insufficiency or associated endocrine diseases
10. Other conditions such as special nutritional requirements or medications that may affect lipid metabolism or blood pressure
11. Participate or participating in a clinical trial in the last 3 months
12. Incapacity to continue in the study
13. History of gastrointestinal disease that can impair the absorption of nutrients
14. Suicide attempt

Date of first enrolment

28/01/2009

Date of final enrolment

31/03/2010

Locations

Countries of recruitment

Spain

Study participating centre

C/ Sant Llorenç, 21

Reus

Spain

43201

Sponsor information

Organisation

Rovira i Virgili University (Spain)

ROR

https://ror.org/00g5sqv46

Funder(s)

Funder type

Government

Funder Name

Spanish Ministry of Education and Science (Spain) (ref: AGL2005-07881-C02-01/ALI)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	15/01/2015		Yes	No