

# Effect of olive oil enriched in oleanolic acid on the incidence of type 2 diabetes mellitus in patients with pre-diabetes

**Submission date**

25/04/2009

**Recruitment status**

No longer recruiting

Prospectively registered

Protocol

**Registration date**

03/11/2009

**Overall study status**

Completed

Statistical analysis plan

Results

**Last Edited**

01/08/2019

**Condition category**

Nutritional, Metabolic, Endocrine

Individual participant data

**Plain English summary of protocol**

Not provided at time of registration

## Contact information

**Type(s)**

Scientific

**Contact name**

Dr Jose Manuel Santos-Lozano

**Contact details**

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## Additional identifiers

**Protocol serial number**

0037/2008

## Study information

**Scientific Title**

Effect of olive oil enriched in oleanolic acid on the incidence of type 2 diabetes mellitus in patients with pre-diabetes: a multicentre randomised double-blind controlled trial

## Acronym

PREDIABOLE

## Study objectives

A dietary intervention based on the consumption of olive oil rich in oleanolic acid, reaching a concentration of 600 mg/kg, reduces the incidence of type 2 diabetes mellitus by at least 20% in patients with pre-diabetes (impaired glucose tolerance and impaired fasting glucose) compared to another group that consumed the same amount of commercial olive oil not reinforced with the aforementioned acid.

Please note that as of 09/11/09 this record has been updated. All updates can be found in the relevant field with the above update date. Please also note that the start and end dates of this trial have been changed from 20/05/2009 and 31/12/2009 to 01/10/2009 and 31/12/2012, respectively.

## Ethics approval required

Old ethics approval format

## Ethics approval(s)

Research and Ethics Committee of the Sevilla Primary Care Division gave approval on the 20th of March 2008.

## Study design

Multicentre randomised double-blind controlled trial

## Primary study design

Interventional

## Study type(s)

Treatment

## Health condition(s) or problem(s) studied

Type 2 diabetes mellitus

## Interventions

At each visit, patients will receive the oil for their consumption over 3 months. In both of the groups every 3 months, a visit will be made to provide a customised dietetic intervention. The amount of oil to consume is 55.5 ml/day, taken raw. In the case of the oil enriched with oleanolic acid, this would contribute 40 mg/day to the participants diet.

Added 9/11/09:

1. Baseline variables (BV) and patient data (PD) measured at visit 0 (baseline visit):
  - 1.1. History of type 2 diabetes mellitus in first-degree relative.
  - 1.2. Time developments of prediabetes.
  - 1.3. History of hypertension, ischemic heart disease, cerebrovascular disease and peripheral arterial disease.
  - 1.4. Smoking status and alcohol consumption
  - 1.5. Physical Exercise.
2. Lifestyle information also assessed at baseline

## Intervention Type

Drug

## Phase

Phase II

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

Oleanolic acid

## Primary outcome(s)

Incidence of diabetes, diagnosed according to basal blood glucose or oral glucose overload, conducted every 6 months or 12 months respectively after entry into the study, according to recent criteria of the American Diabetes Association (ADA) (a fasting plasma glucose  $\geq$  126 mg/dl or symptoms of hyperglycaemia and casual plasma glucose  $\geq$  200 mg/dl or a plasma glucose value at 2 hours after an oral overload of 75 g of glucose  $\geq$  200 mg/dl. In the absence of unequivocal hyperglycaemia, these criteria should be confirmed by repeating the test on a different day.)

## Key secondary outcome(s)

1. Body mass index (BMI = weight in kilograms divided by the square of height in metres) measured at baseline
2. Waist circumference (abdominal perimeter in cm)
3. Systolic blood pressure (SBP) and diastolic blood pressure (DBP)
4. Pulse pressure (SBP - DBP)
5. Lipid profile:
  - 5.1. Total cholesterol (mg/dl)
  - 5.2. Triglycerides (mg/dl)
  - 5.3. High density lipoprotein (HDL) cholesterol (mg/dl)
  - 5.4. Low density lipoprotein (LDL) cholesterol (mg/dl)
6. Fasting plasma glucose (mg/dl)
7. Insulin (IU/ml)
8. HOMA index (Homeostasis Model Assessment):  $\text{uU/ml} \times \text{mmol/L} / 22.5$  (HOMA =  $[\text{glucose (millimoles per litre)} \times \text{insulin (microunits per millilitre)}] / 22.5$ ) was used as a measure of insulin resistance (IR)
9. Haemoglobin A1c (HbA1c) (%)
10. Plasma glucose at 2 hours after oral glucose overload (75 g) measured at months 12 and 24 (and at baseline where applicable)

Added 09/11/09:

11. Personal interview (PI) carried out at baseline and months 3, 6, 9, 12, 15, 18, 21 and 24 to assess:
  - 11.1. hypocaloric diet
  - 11.2. physical exercise habits
  - 11.3. toxic habits
12. Assessment of Compliance (AC) at months 3, 6, 9, 12, 15, 18, 21 and 24

Physical Examination (PE) (pts. 2-4 above) measured at baseline, months 3, 6, 9, 12, 15, 18, 21, and 24.

Laboratory variables monitored (LVM) (pts. 5-9 above) measured at baseline, months 6, 12, 18 and 24.

## Completion date

31/12/2009

## Eligibility

### Key inclusion criteria

Current information as of 09/11/09:

1. Men or women with an age range between 30 and 80 years
2. Body mass index  $\geq 25$  kg/m<sup>2</sup> and  $< 40$  kg/m<sup>2</sup>
3. Acceptance to participate in the study and signed the corresponding informed consent

Initial information at time of registration:

1. Men or women with an age range between 30 and 80 years
2. Body mass index  $\geq 25$  kg/m<sup>2</sup>
3. Acceptance to participate in the study and signed the corresponding informed consent

### Participant type(s)

Patient

### Healthy volunteers allowed

No

### Age group

Adult

### Sex

All

### Total final enrolment

176

### Key exclusion criteria

Current information as of 09/11/09:

1. Diabetes at the time of admission to the study:
  - 1.1. Glycaemia baseline  $\geq 126$  mg/dl or glycaemia 2 hours after the oral overload
  - 1.2. 75 g of glucose  $\geq 200$  mg/dl
  - 1.3. Diabetes confirmed by a physician and confirmed by other clinical data
  - 1.4. In antidiabetic treatment (oral and/or insulin)
2. Alcohol dependence syndrome or any other addiction
3. Physical, mental or intellectual limitation to take part in a study of dietary intervention
4. Difficulty or lack of predisposition to change food habits
5. Drugs or medical conditions that interfere with the diagnosis of diabetes:
  - 5.1. Beta-blockers
  - 5.2. Systemic glucocorticoids
  - 5.3. Selective inhibitors of the reuptake of serotonin at doses indicated for weight reduction
  - 5.4. Other drugs for weight reduction (orlistat and sibutramine)
  - 5.5. Thyroid Disease suboptimal treatment
  - 5.6. Other endocrine diseases (such as Cushing's disease, acromegaly)
  - 5.7. Fasting triglycerides  $> 600$  mg/dl despite treatment
6. Conditions or circumstances which may affect the conduct of the trial:
  - 6.1. Inability to communicate with the researchers conducting the intervention
  - 6.2. Not willing to accept the treatment assigned by randomisation

- 6.3. Participation in another project that could interfere with this project
- 6.4. Loss of weight for any reason superior to 10 % in the last three months, except postpartum
- 6.5. Inability to walk 400 meters in 10 minutes without stopping
- 7. Cancer in the last 5 years that needed treatment, unless the prognosis is good
- 8. Systolic blood pressure  $\geq$  180 mmHg and/or diastolic blood pressure  $\geq$  110 mmHg
- 9. Pregnant women of childbearing age, if:
  - 9.1. Currently pregnant or within 3 months postpartum
  - 9.2. Lactating
  - 9.3. Pregnancy planned during the study period

#### Initial information at time of registration

- 1. Diabetes at the time of admission to the study:
  - 1.1. Glycaemia baseline  $\geq$  126 mg/dl or glycaemia 2 hours after the oral overload
  - 1.2. 75 g of glucose  $\geq$  200 mg/dl
  - 1.3. Diabetes confirmed by a physician and confirmed by other clinical data
  - 1.4. In antidiabetic treatment (oral and/or insulin)
- 2. Alcohol dependence syndrome or any other addiction
- 3. Physical, mental or intellectual limitation to take part in a study of dietary intervention
- 4. Difficulty or lack of predisposition to change food habits
- 5. Drugs or medical conditions that interfere with the diagnosis of diabetes:
  - 5.1. Thiazide diuretics
  - 5.2. Beta-blockers
  - 5.3. Systemic glucocorticoids
  - 5.4. Selective inhibitors of the reuptake of serotonin at doses indicated for weight reduction
  - 5.5. Other drugs for weight reduction (orlistat and sibutramine)
  - 5.6. Thyroid Disease suboptimal treatment
  - 5.7. Other endocrine diseases (such as Cushing's disease, acromegaly)
  - 5.8. Fasting triglycerides > 600 mg/dl despite treatment
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  - 9. Pregnant women of childbearing age, if:
    - 9.1. Currently pregnant or within 3 months postpartum
    - 9.2. Lactating
    - 9.3. Pregnancy planned during the study period

#### Date of first enrolment

20/05/2009

#### Date of final enrolment

31/12/2009

## Locations

#### Countries of recruitment

Spain

**Study participating centre**  
San Pablo Health Center (Primary Care Division of Sevilla).  
Sevilla  
Spain  
41005

## Sponsor information

**Organisation**  
Andalusian Regional Ministry of Health (Consejería de Salud de la Junta de Andalucía) (Spain)

**ROR**  
<https://ror.org/03q4c3e69>

## Funder(s)

**Funder type**  
Government

**Funder Name**  
Andalusian Regional Ministry of Health (Consejería de Salud de la Junta de Andalucía) (Spain)  
(ref: 0037/2008)

## 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?
<a href="#">Results article</a>	results	01/11/2019	01/08/2019	Yes	No