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A nutritional supplementation study with Colombian high flavanol cocoa

Submission date	Recruitment status	[ ] Prospectively registered
25/06/2017	No longer recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
25/07/2017	Completed	[ ] Results
Last Edited	**Condition category**	[ ] Individual participant data
24/07/2017	Circulatory System	[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Diet is one of the main factors involved in healthy aging, and certain substances in food may help to maintain good health. Studies have found that a diet rich in cocoa polyphenols reduces age-related diseases, in particular the risk factors of heart diseases. Several studies have investigated how cocoa polyphenols potentially reduce heart disease risk, highlighting their ability to reduce lipid (fat) oxidation and blood pressure, and improve lipid and glucose (sugar) metabolism. However, there is little evidence that consuming cocoa polyphenols reduces inflammation. The aim of this study is to measure the effect of 4 weeks of cocoa consumption on markers of oxidative damage and heart health.

Who can participate?
Healthy individuals aged 25-50

What does the study involve?
Participants are randomly allocated into three groups. The first group takes two pills of cocoa per day, the second group takes four pills per day, and the third group takes eight pills per day. The treatment duration is 4 weeks. The participants are instructed to maintain their usual diet during the study, and refrain from consuming chocolate or flavanol-containing products starting from 3 days before the start of the treatment, and particularly 24 hours before the blood and urine collections. Blood and urine samples are collected before the start of the treatment, 2 hours after the first consumption of cocoa, and again after 2 and 4 weeks.

What are the possible benefits and risks of participating?
Based on the results of the latest studies, cocoa may have potential benefits on oxidative damage and blood fatty acid levels. Cocoa is not considered to be toxic. Moreover, there is compelling evidence from basic science and clinical studies that cocoa nutritional interventions are safe and well tolerated.

Where is the study run from?
Inter-University Consortium “SannioTech” (Italy)

When is the study starting and how long is it expected to run for?
February 2015 to November 2016

Who is funding the study?
CasaLuker S.A. (Colombia)

Who is the main contact?
Dr Giovanni Scapagnini

Contact information

Type(s)
Scientific

Contact name
Prof Giovanni Scapagnini

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
NO. R.F. Rev. 1-10292014

Study information

Scientific Title
A nutritional supplementation study with Colombian high flavanol cocoa (CHFC): a randomised controlled trial

Acronym
CHFC

Study objectives
To study in young and middle age healthy individuals the effect of a dietary intervention with Colombian High Flavanols Cocoa (CHFC) on biomarkers of oxidative damage and cardiovascular health.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Independent Ethics Committee of the Hospital Gaetano Rummo, 02/09/2014, Clinical Protocol NO. R.F. Rev. 1-10292014

Study design
Randomised controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
GP practice

Study type(s)
Prevention

Participant information sheet
Not available in web format, please use the contact details to request a patient information sheet

Health condition(s) or problem(s) studied
Cardiovascular health

Interventions
A restricted randomization list was created using PASS 2008 (PASS, LLC. Kaysville, UT, USA) statistical software running on Windows Server 2008 R2 Standard SP1 64 bit Edition (Microsoft, USA) by a biostatistician and stored in a safe place. Randomization sequence was stratified using 10% maximum allowable % deviation with a 1:1 allocation ratio. The allocation sequence was concealed from the in site study director in sequentially numbered, opaque, and sealed envelopes, reporting the unblinded treatment allocation (based on subject entry number in the study). The A4 sheet reporting the unblinded treatment was folded to render the envelope impermeable to intense light. After acceptance of the subject in the study the appropriate numbered envelope was opened. An independent technician dispensed either active or placebo products according to the card inside the envelope. The study adhered to established procedures to maintain separation between the investigator and its collaborators and the staff that delivered the intervention. Investigator and its collaborators who obtained outcome measurements were not informed on the product group assignment. Staff who delivered the intervention did not take outcome measurements. Subjects, investigator and collaborators were kept masked to products assignment.

Participants were randomized into three groups:
1. The first group took two pills (500 mg) of cocoa/day (1 gram of cocoa/day; ~ 55 mg flavanols)
2. The second group took four pills/day (2 grams in total; ~ 110 mg flavanols)
3. The last group took 8 pills/day (4 grams total ~ 220 mg flavanols)

The participants were instructed to maintain their usual dietary intakes during the trial, and requested to refrain from consuming chocolate or flavanol-containing products starting from 3 days before the beginning of the treatment, and particularly 24 hours before the blood and urine collections. All subjects declared that they did not change their diets during the course of the study and they attended our medical facility every week to assess clinical conditions and adherence to the protocol. Before the beginning of the nutritional treatment (t-0) blood and urine samples were collected, clinical assessment, MNA (Mini Nutritional Assessment) and body mass index (BMI; kg/m2) were also determined. A second blood sample was collected after 2 hours from the first consumption of CHFC. Subjects consumed the allocated amount of CHFC in one single dosage daily. Blood and urine samples were collected again after 2 and 4 weeks. Together with the last collection, subjects received a final clinical assessment of MNA and BMI.

Intervention Type
Supplement

Primary outcome measure
Primary and secondary outcomes were measured at the same timepoints: before the beginning of the treatment (T-0) and after 2 hours (T-1), 2 weeks (T-2) and 4 weeks (T-3).

1. Urinary F2-Isoprostanes, determined by liquid chromatography–tandem mass spectrometry (LC-MS/MS) of morning urine sampled at the beginning of the study (baseline), at 2 weeks, and at the end of the study (4 weeks)
2. Plasma glutathione, determined with Glutathione HPLC kit (ImmundiagnostikAG, Bensheim, Germany) in whole blood samples
3. Blood fatty acid composition, analyzed by gas chromatography (Shimadzu) using a 30-m Omegawax 320 (Supelco-Sigma) capillary column
4. Plasma concentration of oxidized LDL, measured by a sandwich enzyme-linked immunosorbent assay method using a commercially available kit (Immundiagnostik AG, Bensheim, Germany)

Secondary outcome measures
Triglycerides, total cholesterol (TC), high-density lipoprotein cholesterol (HDLc), and low-density lipoprotein cholesterol (LDLc), measured using colorimetric enzymatic tests (Thermo Scientific, Waltham, MA) before the beginning of the treatment (T-0) and after 2 hours (T-1), 2 weeks (T-2) and 4 weeks (T-3).

Overall study start date
20/02/2015

Completion date
30/11/2016

Eligibility

Key inclusion criteria
1. Age 25–50 years
2. Good general health
3. Body mass index between 22 and 30 kg/m2
4. No history of chronic diseases

Participant type(s)
Healthy volunteer

Age group
Adult

Sex
Both

Target number of participants
50

Key exclusion criteria
1. Individuals who were taking anti-inflammatory drugs, cardiovascular medications, lipid-altering drugs, and hormone replacement therapy
2. Smokers
3. Individuals engaged in vigorous exercise
4. Vegetarians
5. People who routinely take multivitamins or herbal supplements

Date of first enrolment
10/12/2015

Date of final enrolment
01/12/2016

Locations

Countries of recruitment
Italy

Study participating centre
Inter-University Consortium “SannioTech”
Piazza Giuseppe Moscati 8
Apollosa
Italy
82030

Sponsor information

Organisation
CasaLuker S.A.

Sponsor details

Calle 13 No. 68-98 – Zona Industrial
Bogotá
Colombia
-

Sponsor type
Industry

ROR
https://ror.org/02wmh7s95

Funder(s)

Funder type
Industry

Funder Name
CasaLuker S.A.

Results and Publications

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

Intention to publish date
30/11/2017

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Giovanni Scapagnini.

IPD sharing plan summary
Available on request