Gepigmenteerde aardappel studie

No registrations found.

Ethical review	Positive opinion
Status	Recruitment stopped
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON25850

Source
NTR

Brief title
HiPP

Health condition

Bioavailability
Potatoes
Anthocyanins
Biobeschikbaarheid
Aardappels
Anthocyanen

Sponsors and support

Primary sponsor: Wageningen University
Source(s) of monetary or material Support: Topconsortia voor Kennis en Innovatie (TKI)

Intervention

Outcome measures

Primary outcome

To explore the absorption of anthocyanins, changes are measured in blood plasma and urine (intact molecules and metabolite excretion products) after consumption of the different test

meals. Intact molecules and main metabolites (protocatechuic acid derived, vanillic acid, vanillic acid sulfate, hippuric acid and ferulic acid) will be measured, and metabolic profiling will be used to determine other yet unknown metabolites [8, 40].

These study parameters will be monitored from t=0 to t=9 hrs after consumption of the test meal (see Figure 2 for the sampling time points).

Secondary outcome

Not applicable

Study description

Background summary

Rationale: Potatoes (Solanum tuberosum) are the largest non-cereal crop and the fourth most produced staple food crop in the world. In addition to a high content of carbohydrates, proteins and dietary fibre, potatoes are also rich in miconutrients like vitamin C, vitamin B, folate and minerals, such as potassium, magnesium, and iron. Coloured potatoes contain secondary metabolites such as anthocyanins and carotenoids, which are important bioactives. Diets rich in such compounds have been associated with a lower incidence of atherosclerosis, certain cancers, macular degeneration and severity of cataracts. Pigmented potatoes could fit therefore in a healthy lifestyle. Pigmented potatoes contain higher levels of lutein and zeaxanthin (yellow/red color) or anthocyanins (purple color), however limited evidence is available on their bioavailability in humans. Therefore this study was set up as a randomized controlled cross-over study in fasted healthy research subjects on a restricted diet (low in anthocyanins). Research subjects will consume once high pigment potatoes, white potatoes, or water, in random order. Using this approach the absorption of anthocyanins will be explored.

Objective: The main objective is to explore the absorption of anthocyanins from high pigment potatoes in humans. In addition, we aim to identify various metabolites in urine, originating from the anthocyanins in the high pigment potatoes.

Study design: Randomized controlled cross-over study
Study population: Ten apparently healthy males, 18-65 years old recruited from the human volunteer database kept at the Division of Human Nutrition.

Intervention:
Test meals consisting of:
1. 500 gram high pigment potato mash with High Oleic Sunflower Oil (HOSO), containing in total 90 mg anthocyanins (mainly mainly petunidin-, delphinidin-, pelargonidin-, peonidin-, and malvidin glucosides) (based on analysis of the mash)
2. 500 gram white potato mash with HOSO (negative control)

3. Only water (blank)
Each research subject will receive each of these test meals in randomized order, with one week in between the different test meals.

Main study parameters/endpoints:
The main study endpoint is the absorption of anthocyanins. For anthocyanins, intact molecules and metabolites will be measured in blood plasma as well as metabolites excreted in urine. These study parameters will be monitored from t=0 to t=9 hrs after consumption of the test meal.

Study objective

Primary Objective: To explore the absorption of anthocyanins and to determine the different metabolites in urine and blood plasma, originating from anthocyanins in high pigment potatoes in humans.

Research Questions:
• What is the absorption of anthocyanins from high pigment potato mash with HOSO compared to white potato mash with HOSO?
• What metabolites, originating from anthocyanins, can be identified in the urine after consumption of high pigment potato mash with HOSO?

Study design

The study parameters will be monitored from t=0 to t=9 hrs after consumption of the test meal.

In total three different testdays will take place for each participant

Intervention

Test meals 1 and 2 both weigh 500 grams and contain the same amount of potato mash, salt and oil Anthocyanin content will vary per test meal. The levels will be confirmed through samples taken for analysis on each of the test days.
Test meal 1 will include the Violet queen variety which is anticipated to provide ~90 mg of anthocyanins (of which the most important are the mainly petunidin-, delphinidin-, pelargonidin-, peonidin-, and malvidin glucosides).
Test meal 2 (negative control) includes a white flesh potato variety (Ivory Russet), devoid of anthocyanins.
Test “meal” 3 will only include the consumption of water, for baseline profiling of anthocyanin metabolites.

Contacts

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Eligibility criteria

Inclusion criteria

• Male

• Age: 18-65 years

• Body Mass Index (BMI) 18-30 kg/m2.

Exclusion criteria

• Recent history of acute gastro-intestinal conditions (indigestion, diarrhoea, constipation) (over last 2 weeks before screening).

• History of gastro-intestinal (atrophic gastritis, gastric and peptic ulcers, small bowel disease or resection, enterocolitis, Crohn’s disease, bleeding disorders) and/or renal diseases (according to research subjects own statement)

• Use of supplements containing anthocyanins in the last 3 months

• Use of (prescribed) medication during the whole study (excluding painkillers)

• Smoking

• Current participation in other studies

• Having a medically prescribed diet

• Working or doing an internship or thesis at the Division of Human Nutrition

• Allergic or hypersensitivity for potato

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-05-2019
Enrollment:	10
Type:	Actual

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	10-10-2018
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

ID: 48594
Bron: ToetsingOnline

Titel:

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL7325
NTR-old	NTR7541
CCMO	NL66686.081.18
OMON	NL-OMON48594

Study results