

Exploring the absorption of Anthocyanins from high pigment potatoes

Published: 08-11-2018

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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.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON48594

Source

ToetsingOnline

Brief title

HiPP: High Pigment Potato project

Condition

- Other condition

Synonym

nvt

Health condition

opname carotenoiden

Research involving

Human

Sponsors and support

Primary sponsor: Wageningen Universiteit

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

Intervention

Keyword: Anthocyanins, Bioavailability, Potatoes

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.

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

Secondary outcome

Not applicable

Study description

Background summary

Potatoes (*Solanum tuberosum*) are the largest non-cereal crop and the fourth most produced staple food crop in the world (ZHANG, Fen et al. 2017). In addition to the high content of carbohydrates, protein composition and dietary fibre, potatoes are also rich in phytonutrients like vitamin C, vitamin B, folate and minerals, such as potassium, magnesium, and iron (Kolasa 1993). Coloured potatoes contain secondary metabolites such as anthocyanins and carotenoids, which are important bioactives (Lachman and Hamouz 2005, Ezekiel, Singh et al. 2013). Diets rich in such compounds have been associated with a lower incidence of atherosclerotic heart disease, certain cancers, macular degeneration and severity of cataracts (Brown 2005). 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 the bioavailability of these to the human body.

Study 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.

Study design

Randomized controlled cross-over study

Intervention

Test meals consisting of:

1. 500 gram high pigment potato mash (rich in anthocyanins) with High Oleic Sunflower Oil (HOSO)
2. 500 gram white potato mash with HOSO oil (negative control)
3. Only water (blank)

Each participant serves as their own control and will receive each of these test meals in randomized order, with one week in between the different test meals

Study burden and risks

Estimation of burden on study participants:

For this study, participants are expected 3 whole test days at the research location. A test meal is offered every test day.

During a test day, 3 venepunctures will be done to collect 9 ml of blood (27 ml in total during the study). Furthermore, the complete urine will be collected during the study day (9 hours). Three days prior to the test day participants are asked to adhere to dietary restrictions, in which foods high in Anthocyanins should be avoided. Participants will be asked to write down all foods they eat in a food diary.

Potatoes are a widely consumed food crop. The rare complications of venepuncture including bleeding, bruising and phlebitis, these will be explained to the subjects. The study physician will be available any time, if medical judgment or care should be required. In conclusion, the induced health risk for the subjects related to these study can be assumed to be minimal.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age

Adults (18-64 years)

Elderly (65 years and older)

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 paracetamol)
- * 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
Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

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

Ethics review

Approved WMO	
Date:	08-11-2018
Application type:	First submission
Review commission:	METC Wageningen Universiteit (Wageningen)
Approved WMO	
Date:	21-02-2019
Application type:	Amendment
Review commission:	METC Wageningen Universiteit (Wageningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

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

ID: 25850

Source: NTR

Title:

In other registers

Register	ID
Other	Geregistreerd in het Nederlands Trial Register: NTR7541
CCMO	NL66686.081.18
OMON	NL-OMON25850