Effects of Acetate on Insulin Sensitivity, CNS regulation of food intake and appetite in Humans

Gepubliceerd: 12-02-2020 Laatst bijgewerkt: 13-12-2022

We hypothesize that the metabolic effects of acute infusion of acetate are different in insulin resistant subjects compared to lean subjects.

Ethische beoordeling	Positief advies
Status	Werving gestart
Type aandoening	-
Onderzoekstype	Interventie onderzoek

Samenvatting

ID

NL-OMON21096

Bron
NTR

Verkorte titel
AISCHA trial

Aandoening

metabolic syndrome

Ondersteuning

Primaire sponsor: Amsterdam University Medical Centersm location AMC
Overige ondersteuning: Amsterdam University Medical Centers

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

The main objective of this study is to look at the effect of iv acetate infusion on postprandial

glucose metabolism and whether this effect differs between healthy lean subjects and obese subjects with metabolic syndrome.

Toelichting onderzoek

Achtergrond van het onderzoek

Obesity is a major public health problem. Mounting evidence suggest a prominent role for the gut microbiome in pathophysiological pathways that influence the central nervous system (CNS) regulation of food intake. In this regard, the short-chain fatty acid (SCFA) acetate is one of the major metabolites produced by gut microbiota from dietary fibre. It has been established that acetate is absorbed into the blood stream and passes the blood brain barrier (BBB). In rodent studies, acetate has been shown to function as a beneficial substrate in hypothalamic brain regions to mediate both glucose metabolism and insulin secretion as central appetite regulation. However, certain other studies have shown contradicting results thus leaving the role of acetate in energy metabolism and appetite regulation controversial. Moreover, the metabolic effects of acetate may be different in insulin resistant subjects compared to the physiological situation. We therefore aim to study the acute effects of intravenous (iv) infusion of acetate on glucose metabolism and CNS regulation of food intake both in healthy lean subjects and in obese subjects with metabolic syndrome.

Doel van het onderzoek

We hypothesize that the metabolic effects of acute infusion of acetate are different in insulin resistant subjects compared to lean subjects.

Onderzoeksopzet

Differences in postprandial plasma glucose and insulin will be compared between the acetate intervention and placebo condition by means of a 120min SMMT after either acetate or saline infusion

Onderzoeksproduct en/of interventie

intravenous infusion of acetate or saline

Contactpersonen

Publiek

AMC
Max Nieuwdorp

0031 20 5666612

Wetenschappelijk

AMC
Max Nieuwdorp

0031 20 5666612

Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

Inclusion criteria healthy lean subject group:
- Healthy Caucasian male or female
- Age 40-65
- Women must be post-menopausal
- BMI range of 19-25 kg/m2
- Subjects should be able and willing to give informed consent.

Inclusion criteria obese metabolic syndrome subject group:
- Caucasian male or female with metabolic syndrome
- Age 40-65
- Women must be post-menopausal
- BMI range of 25-40 kg/m2
- At least 3 out of 5 NCEP metabolic syndrome criteria: fasting plasma glucose ≥ 5.6 mmol/L and/or HOMA-IR ≥ 2.5, triglycerides ≥ 1.6 mmol/L, waist-circumference > 102 cm, HDL cholesterol ≤ 1.04 mmol/L, blood pressure ≥ 130/85.
- Subjects should be able and willing to give informed consent.

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

Exclusion criteria for all participants
- Systemic medication use, except for paracetamol
- Oral or intravenous antibiotics in the past 3 months before inclusion

- Smoking
- Substance abuse
- Contra-indication for MRI, such as claustrophobia or pacemaker

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Cross-over
Toewijzing:	Gerandomiseerd
Blindering:	Dubbelblind
Controle:	Placebo

Deelname

Nederland

Status:	Werving gestart
(Verwachte) startdatum:	12-02-2020
Aantal proefpersonen:	60
Type:	Verwachte startdatum

Voornemen beschikbaar stellen Individuele Patiënten Data (IPD)

Wordt de data na het onderzoek gedeeld: Nee

Ethische beoordeling

Positief advies

Datum:	12-02-2020
Soort:	Eerste indiening

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

Geen registraties gevonden.

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL8381
Ander register	METC AMC : METC 2019_211

Resultaten

Samenvatting resultaten
are planned end 2022