Effect of N3-polyunsaturated fatty acids on peripheral insulin sensitivity.

Gepubliceerd: 13-04-2010 Laatst bijgewerkt: 19-03-2025

1. SMOFlipid® decreases peripheral insulin sensitivity to a lesser extent compared to the other lipid emulsions, Intralipid® and Clinoleic®, due to the lower n6/n3 ratio and the higher MCT concentration in the SMOFlipid emulsion; 2. SMOFlipid®,...

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

Samenvatting

ID

NL-OMON19945

Bron
NTR

Verkorte titel
Fish Oil and Insulin Resistance

Aandoening

Trans parenteral nutrition
nutirtion
Insulin resistance

Ondersteuning

Primaire sponsor: Academic Medical Center (AMC), Department of Endocrinology and Metabolism
Overige ondersteuning: Academic Medical Center (AMC), Department of Endocrinology and Metabolism

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

To study the acute effect of iv SMOFlipid® on peripheral glucose uptake in healthy humans.

Toelichting onderzoek

Achtergrond van het onderzoek

Fatty acids (FA) are no longer considered solely as a source of energy but also as potent regulators of intermediary metabolism. N3-poly unsaturated fatty acids (N3-PUFA) have been shown to be associated with a lower prevalence of cardiovascular diseases. FA are also involved in obesity induced insulin resistance and DM2. Saturated fatty acids are known for their negative interference on insulin stimulated glucose uptake in peripheral tissues. We recently studied the effect of two different intravenous lipid emulsions containing a mixture of MUFA, PUFA and saturated fatty acids on insulin sensitivity (MEC 05-295) and found insulin resistance but no difference between the two different lipid emulsions. Lipid emulsions for parenteral nutrition containing fish oil are now available. SMOFlipid emulsion is commercially available and based on 30% soy-bean oil, 30% medium chain triglycerides (MCT), 25% olive oil and 15% fish oil. We hypothesize that SMOFlipid® has a less profound effect on insulin sensitivity compared to the two earlier studied lipid emulsions.

Doel van het onderzoek

1. SMOFlipid® decreases peripheral insulin sensitivity to a lesser extent compared to the other lipid emulsions, Intralipid® and Clinoleic®, due to the lower n6/n3 ratio and the higher MCT concentration in the SMOFlipid emulsion;

2. SMOFlipid®, rich in specific N3-PUFA and MCT, affects not only the serum fatty acid composition but also the concentrations of bioactive lipids within skeletal muscle.

Onderzoeksopzet

Every participant will serve as his own control and study days will be performed in random assignment. Both study days for one individual will be scheduled at least two weeks apart.

Onderzoeksproduct en/of interventie

Hyperinsulinemic euglycemic clamp with stable isotopes and concomitant infusion of a fish oil containing lipid emulsion, SMOFlipid®, on one occasion, and control saline infusion on the other occasion. Infusion will take 6 hours. FFA levels will be clamped at approximately 0.5 mmol/L. At the end of both clamps a muscle biopsy from the musculus vastus lateralis will be

performed. Each participant will serve as its own control. Studies will be performed in balanced assignment.

Contactpersonen

Publiek

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Wetenschappelijk

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

1. Male;

2. BMI 20-25 kg/m2;

3. Stable weight during 3 months before participation and during participation;

4. Normal physical activity with at most 2 times per week sport activities;

5. Age 18-30;

6. Non-smoking;

7. Caucasian.

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

1. Hypersensitivity to fish-, egg-, soya- or peanut protein;

2. Any medical condition or use of medication;

3. DM type II in first degree relatives;

4. Participation in other medical trial during the last 3 months.

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Cross-over
Toewijzing:	N.v.t. / één studie arm
Blindering:	Open / niet geblindeerd
Controle:	Placebo

Deelname

Nederland

Status:	Werving gestart
(Verwachte) startdatum:	01-05-2010
Aantal proefpersonen:	10
Type:	Verwachte startdatum

Ethische beoordeling

Positief advies

Datum:	13-04-2010
Soort:	Eerste indiening

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

ID: 34627
Bron: ToetsingOnline
Titel:

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL2162
NTR-old	NTR2286
CCMO	NL30857.018.10
ISRCTN	ISRCTN wordt niet meer aangevraagd.
OMON	NL-OMON34627

Resultaten

Samenvatting resultaten
N/A