# GM3 and insulin sensitivity.

No registrations found.

| | |
|---|---|
| **Ethical review** | Positive opinion |
| **Status** | Pending |
| **Health condition type** | - |
| **Study type** | Observational non invasive |

## Summary

### ID

NL-OMON21599

**Source**
NTR

**Brief title**
GM3

**Health condition**

Diabetes, obesity, insulin resistance,

### Sponsors and support

**Primary sponsor:** Academic Medical Center (AMC), Department of Endocrinology and Metabolism
**Source(s) of monetary or material Support:** Academic Medical Center (AMC), Department of Endocrinology and Metabolism

### Intervention

### Outcome measures

**Primary outcome**

- Peripheral glucose uptake (Rd)

- Ganglisosides concentration in muscle and adipose tissue

**Secondary outcome**

- Plasma concentration of glucoregulatory hormones

- Energy expenditure

- Carbohydrate oxidation and fat oxidation

- VO2 max

- Muscle fiber type

# Study description

### Background summary

Gangliosides reside within the plasma membrane and are able to modulate insulin signaling at the level of the insulin receptor. The most abundant ganglioside is GM3. Recently, we and others have shown in rats that pharmacologically reducing GM2 and GM3 levels results in amelioration of high fat diet induced insulin resistance. In this study we want to explore if gangliosides are elevated in muscle and adipose tissue of obese subjects inslin resistant subjects compared to matched healthy controls.

### Study objective

We hypothesize that membrane-residing gangliosides are elevated in obese insulin resistant subjects and correlate to peripheral insulin resistance.

Furthermore, we hypothesize that the perturbation of the insulin signaling cascade by elevated gangliosides is caused by a reduced phosphorylation of the insulin receptor.

### Study design

N/A

### Intervention

None:

This is a comparitive study; 10 obese men mached for gender and age with 10 lean men.

# Contacts

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# Eligibility criteria

## Inclusion criteria

Inclusion criteria for all participants

1. Written informed consent

2. Caucasian

3. Able to keep a normal day and night rhythm during the study period (i.e. no shift work)

4. Stable weight for at least 3 months

5. Age 20-55 years

Inclusion criteria for healthy volunteers:
1. 20 ¡Ü BMI ¡Ü 25 kg/m2

2. Fasting glucose level of < 5.6 mmol/L, in addition to a glucose level of < 7.8 mmol/L at 2 hours after intake of 75 g glucose (OGTT).

Inclusion criteria for obese subjects:
1. BMI >30 kg/m2

2. Fasting glucose level of < 7 mmol/L, in addition to a glucose level of < 11.0 mmol/L at 2 hours after intake of 75 g glucose (OGTT).

3. HOMA IR > 2.7

### Exclusion criteria

Exclusion criteria for all participants:

1. Participation in an investigational drug trial within 90 days prior to our study

2. history of or current abuse of drugs or alcohol (>14 U/week)

3. Smoking
4. Vigorous physical activity

5. Family history of DM II

6. Familial dyslipidemia

7. Any medical condition except hypertension and dyslipidemia in the obese group

8. Use of any medication except for anti-hypertensives, excluding ACE-inhibitors/AII-antagonists.

## Study design

### Design

| | |
|---|---|
| Study type: | Observational non invasive |
| Intervention model: | Other |
| Masking: | Open (masking not used) |
| Control: | Active |

### Recruitment

NL
Recruitment status: Pending

| | |
|---|---|
| Start date (anticipated): | 10-12-2008 |
| Enrollment: | 20 |
| Type: | Anticipated |

## Ethics review

| | |
|---|---|
| Positive opinion<br>Date: | 18-11-2008 |
| Application type: | First submission |

## Study registrations

### Followed up by the following (possibly more current) registration

No registrations found.

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

No registrations found.

### In other registers

| Register | ID |
|---|---|
| NTR-new | NL1471 |
| NTR-old | NTR1540 |
| Other | : MEC 08/280 |
| ISRCTN | ISRCTN wordt niet meer aangevraagd |

## Study results

**Summary results**
N/A