Metabolic effects of morning light in obesity and type 2 diabetes

No registrations found.

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

Summary

ID

NL-OMON24977

Source
Nationaal Trial Register

Brief title
SUNRISE 2

Health condition

glucose metabolism

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

To investigate the effect of morning light exposure on postprandial glucose excursions and expression of metabolic and clock genes in adipose tissue.

Secondary outcome

To investigate the effect of morning light exposure on postprandial insulin excursions, postprandial free fatty acid (FFA) excursions, postprandial triglyceride levels, morning glucocorticoid increase, morning salivary melatonin decrease and measurements of skin temperature decrease and heart rate variability.

Study description

Background summary

N/A

Study objective

Type 2 diabetes is a major threat to human health. Disruption of the circadian timing system is associated with metabolic changes. Disturbance of the daily light and dark rhythm could contribute to this phenomenon and effects metabolic pathways. We hypothesize that mornig bright light exposure decreases postprandial glucose excursion in obese subjects with and without type 2 diabetes.

Study design

Frequent plasma measurements of glucose, insulin, C-peptide, free fatty acid and triglyceride. Adipose tissue biopsy at one timepoint. Continous measurement of heart rate variability and skin temperature.

Intervention

Subject will be admitted in the evening and receive a standard meal in normal room light. They sleep for 8 hours in the dark. From wake-up time they consume a standard liquid in bright or dim light.

Contacts

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Eligibility criteria

Inclusion criteria

Group2
1. Age 18-80 years;
2. Male sex;
3. BMI >25 kg/m2
4. DM2: Fasting plasma glucose >6.9 mmol/L;
5. Habitual wake-up time between 6:00 and 9:00.

Exclusion criteria

1. Medication interfering with glucose metabolism or neuronal synaptic transmission;

2. Gastro-intestinal or metabolic disease that will interfere with digestion or metabolism;

3. Neuropsychiatric illness including severe depression;

4. Epilepsy;

5. Hypertension;

6. Ophthalmological abnormalities.

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Placebo

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-01-2014
Enrollment:	8
Type:	Actual

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	13-06-2014
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	NL4141
NTR-old	NTR4645
Other	METC AMC : 2013_259 METC AMC

Study results

Summary results

Versteeg RI, Stenvers DJ, Visintainer D, Linnenbank A, Tanck MW, Zwanenburg G,

Smilde AK, Fliers E, Kalsbeek A, Serlie MJ, la Fleur SE, Bisschop PH. Acute

Effects of Morning Light on Plasma Glucose and Triglycerides in Healthy Men and

Men with Type 2 Diabetes. J Biol Rhythms. 2017 Apr;32(2):130-142. doi:

10.1177/0748730417693480. Epub 2017 Mar 20. PubMed PMID: 28470119; PubMed Central

PMCID: PMC5423535.