The effect of moderate alcohol consumption on a human in vivo model of low-grade systemic inflammation in young, normal-weight men

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Primary objective: To explore whether prolonged moderate alcohol consumption affects in vivo cytokine response after a low dose of LPS in young, normal-weight men.Secondary objectives: To explore whether prolonged moderate alcohol consumption-...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Endocrine and glandular disorders NEC
Study type	Interventional

Summary

ID

NL-OMON33095

Source
ToetsingOnline

Brief title
Effect of alcohol consumption on a markers of inflammation

Condition

- Endocrine and glandular disorders NEC
- Gastrointestinal signs and symptoms
- Immune disorders NEC

Synonym
inflammation

Research involving
Human

Sponsors and support

Primary sponsor: Stichting Alcohol Research
Source(s) of monetary or material Support: Stichting Alcohol Research

Intervention

Keyword: Alcohol, inflammation, microbiota, radioactive carbonisotope

Outcome measures

Primary outcome

Cytokine response in a human model of low-grade systemic inflammation:

- TNF-α and IL-6 response after intravenous (i.v.) LPS administration

- Alcohol-induced increase in HDL

Secondary outcome

De novo adiponectin protein synthesis rate:

Percentage of 14C in adiponectin after i.v. 14C labeled leucine administration

Gut microbiota in faeces:

Changes in composition of feacal flora and in short chain fatty acids of faeces

Study description

Background summary

High-density lipoprotein (HDL), which is consistently increased after moderate alcohol consumption, is an abundant plasma lipoprotein that is generally thought to be anti-inflammatory in both health and infectious disease. HDL binds and neutralizes the bioactivity of potent bacterial remnants such as lipopolysaccharides (LPS) which stimulate the host innate immune responses.

Study objective

Primary objective: To explore whether prolonged moderate alcohol consumption

affects in vivo cytokine response after a low dose of LPS in young, normal-weight men.

Secondary objectives: To explore whether prolonged moderate alcohol consumption
- increases the de novo adiponectin protein synthesis and
- changes the composition of gut microbiota in faeces
in young, normal-weight men.

Study design

Randomized, placebo-controlled, open-label crossover trial

Intervention

Daily consumption of 100 mL of vodka (30 gram alcohol/day) together with 200 mL orange juice (test) or 200 mL of orange juice (control) for four weeks.

Study burden and risks

Subjects need to visit the study site nine times during the study period of 57 days (see figure § 11.4). In these visits fasted blood (4x), urine (8x), faeces (2x) and adipose tissue samples from the buttocks (2x) will be collected and body weight measurements (9x) will be performed. The total amount collected during the whole study will be around 200 mL blood, 16 mL urine, and 600 mg subcutaneous adipose tissue.
The study will be performed in young people since this population is more susceptible for alcohol-induced improvements in HDL-cholesterol after prolonged moderate alcohol consumption (1). Based on two previous studies (2;3) with the same LPS strain (P8600 B11) and the same intended bolus dose of 0.06 ng/kg body weight among the same population (young males), did not result in any serious adverse effects nor in a rise of body temperature. Besides a slight feeling of coldness, no other side effects are expected (see P8600 B11). Therefore, the LPS strain and dose can be regarded as safe.
Although carbon-14 (P8600 B10) is radioactive, the amount used (total 47 ng) and the exposure to beta radiation (3.6 kBq, total 100 nCi) is low. The radioactive dose equivalent is around 2 µSv, which would result in an increase of the yearly radioactive dose equivalent of less than 1% of natural background. Based on our previous experiences with alcohol studies with higher daily dosages of alcohol (Beulens) in a similar population for the same period of time and based on our previous experiences with intravenous tracer studies, we do not foresee any risk associated with participation in this study.

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

1. Healthy as assessed by the health and lifestyle questionnaire (P8600 F02), physical examination and results of the pre-study laboratory tests
2. Caucasian males aged 21-40 years at Day 01 of the study.
3. Body Mass Index (BMI) of 18 - 27 kg/m2.
4. Alcohol consumption >= 5 and <= 28 standard units/week.
5. Normal Dutch eating habits as assessed by P8600 F02.
6. Voluntary participation.
7. Having given written informed consent.
8. Willing to comply with the study procedures, including refrain from drinking alcoholic drinks other then the alcoholic beverage provided by TNO during the entire study and refrain from fermented dairy and probiotics-containing products.
9. Willing to accept use of all nameless data, including publication, and the confidential use

and storage of all data for at least 15 years.
10. Willing to accept the disclosure of the financial benefit of participation in the study to the authorities concerned.

Exclusion criteria

Subjects with one or more of the following characteristics will be excluded from participation:
1. Participation in any clinical trial including blood sampling and/or administration of substances up to 90 days before Day 01 of this study.
2. Participation in any non-invasive clinical trial up to 30 days before Day 01 of this study, including no blood sampling and/or oral, intravenous, inhalatory administration of substances.
3. Having a history of medical or surgical events or disease that may significantly affect the study outcome, particularly metabolic or endocrine disease and gastrointestinal disorders.
4. Use of medication that may affect the outcome of the study parameters.
5. Having a family history of alcoholism.
6. Smoking.
7. Not having appropriate veins for blood sampling/cannula insertion according to TNO.
8. Reported unexplained weight loss or gain in the month prior to the pre-study screening.
9. Reported slimming or medically prescribed diet.
10. Reported vegan, vegetarian or macrobiotic.
11. Recent blood donation (<1 month prior to the start of the study).
12. Not willing to give up blood donation during the study.
13. Personnel of TNO Quality of Life, their partner and their first and second degree relatives.
14. Not having a general practitioner.
15. Not willing to accept information transfer which concerns participation in the study, or information regarding health, like laboratory results, findings at anamnesis or physical examination and eventual adverse events to and from his general practitioner.
16. Not willing your general practitioner to be notified upon participation in this study

Study design

Design

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

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	24-08-2009
Enrollment:	24
Type:	Actual

Ethics review

Approved WMO Date:	09-07-2009
Application type:	First submission
Review commission:	METC Brabant (Tilburg)
Approved WMO Date:	09-09-2009
Application type:	Amendment
Review commission:	METC Brabant (Tilburg)
Approved WMO Date:	07-10-2009
Application type:	Amendment
Review commission:	METC Brabant (Tilburg)

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
CCMO	NL28554.028.09