

Grant for the study of responsible alcohol/beer consumption in a healthy lifestyle

Application Form 2020

Personal details

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Department: Cardiovascular Program-ICCC

Current position: Scientist

Head of Department: Prof. Lina Badimon

Commitment:

I declare that the information in this Application form and the Project Outline (next page) is, to the best of my knowledge, correct.

If the research grant is awarded to me:

- Preferably a manuscript will be written and submitted to a scientific journal. Otherwise, The Dutch Beer Institute will receive a final report in English to be able to communicate about the research findings.
- I declare that any publication arising from the research undertaken under the auspices of the grant will acknowledge the financial support of The Dutch Beer Institute and a courtesy copy of any manuscript accepted for publication will be sent to The Dutch Beer Institute.
- The final report or manuscript(s) arising from this research will be endorsed by the Supervisor or Head of Department.

Date: 5th October 2020



Signature: Teresa Padro

Project Outline:

Project title:

PROTECTING IMMUNOMODULATION IN HEALTHY ADULTS: EFFECTS OF BEER INTAKE ON THE INFLAMMASOME. ACRONYM: PRO-BEIMM

Keywords: Beer, Inflammasome, biomarkers, gene expression, omics

Background and motivation:

Epidemiological and observational studies relate low to moderate consumption of fermented alcoholic beverages to health benefits and suggest that they confer better cardiovascular protection than spirits due to their heterogeneous content of non-alcoholic components.

Inflammation is now recognized as a huge burden for public health. Low-grade chronic inflammation occurs in several stages of non-transmissible chronic diseases and is a major risk factor for unhealthy aging in humans. In this regard, moderate alcohol drinking is associated to prevention against diseases involving inflammation and immunity. Conversely, at high drinking levels appears an increase in the levels of inflammatory mediators and the susceptibility to infections, which tend to offset the benefits in terms of health. Unfortunately, this area remains poorly understood.

Based on a prospective intervention study, we have shown the value of moderate and regular beer intake in improving functionality of high-density lipoproteins (HDL) (Padro et al, 2018), which are also known to have anti-inflammatory effects. Up to now, however, a better understanding is needed on the effects of alcohol consumption and type of fermented beverage on molecules of the “inflammasome” cascade, cell sensors for innate immunity and triggering of inflammation.

Objective:

The study is designed to investigate the impact of moderate beer intake on the response of the inflammasome pathway in healthy individuals. Specifically, the study intends to determine whether a chronic moderate intake of regular- and alcohol- free beer regulates inflammasome components including the Toll-like-receptor (TLR)-pathway in peripheral blood leukocytes.

Methodology:

We will perform **transcriptomic studies** for coding and non-coding RNA (miRNAs) in blood inflammatory cells and liquid biopsies obtained from adult subjects (N=37), who have been submitted to two sequential intervention periods with traditional and alcohol- free beer (330mL women, 660 mL men/day) as part of a prospective, randomized, single-center human intervention trial with a crossover design (Padro et al, 2018). The study will include **(1)** High throughput gene-expression analysis using quantitative real-time PCR and specific designed arrays; **(2)** “*In silico*” analysis to identify the potential molecular components of the inflammasome-system regulated by the intervention; and, **(3)** validation studies at gene expression level in PBL and at secreted protein level in plasma. Analysis will be performed by RT-PCR (gene expression) and immunoassays (protein level).

In silico analysis will be performed using different public database and the Ingenuity Pathway Analysis (IPA; <http://www.ingenuity.com/>) and microRNA target predictions by calculating the minimum free energy (MFE) for miRNA-gene interactions. For *Statistical analysis* we will use the software Stata and the language R.

Timetable: The study is planned to be accomplished within a 12 month period (finished by December 2021). Transcriptomic studies (point 1) will be started at month 1 and will run over 3-4 months. *In silico* studies will take approximately 2 months after finishing the transcriptomic analysis and thereafter, we will perform the validation studies (2-4 months). Final statistics and manuscript preparation will be accomplished in 2 months.

Please send **this application form and your curriculum vitae (maximum of one A4) in English in pdf format** to info@kennisinstituutbier.nl

**Application timeframe ends on the 5th of October 2020 at 12 midnight.
Incomplete applications will not be considered.**

Privacy Statement

If you submit a proposal for a research grant, we will ask you your name, your affiliation and contact details and the name of your supervisor or head of department. In addition, we of course want to know what your expertise and work experience is, so we also ask for a CV. We share this information with the jury. The information is only used for the procedure to select a winner and will not be kept for more than half a year after the winner has been announced. We use your e-mail address to inform you about the progress and outcome of the research grant.

Of course, we keep the results of the winning research proposal, including the information from the researcher, longer. Otherwise it would be a waste of effort. We keep this information as long as it is relevant. This generally means many years. If you have questions about the grant or the procedure, please send an e-mail to info@kennisinstituutbier.nl.