The smell of success: The effect of human odour and blood quality on the reproduction of malaria mosquito Anopheles coluzzii

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Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Protozoal infectious disorders
Study type	Observational invasive

Summary

ID

NL-OMON48413

Source
ToetsingOnline

Brief title
the smell of success

Condition

- Protozoal infectious disorders

Synonym
jungle fever, malaria

Research involving
Human

Sponsors and support

Primary sponsor: Wageningen Universiteit

Source(s) of monetary or material Support: NWO-ALW

Intervention

Keyword: blood quality, host preference, malaria control, mosquito biology

Outcome measures

Primary outcome

The primary study parameters are the relative attractiveness of odour samples

to mosquitoes and the number of mosquito eggs laid after taking blood.

Secondary outcome

Secundary study parameters are the concentrations of different blood

components, the immune response of the blood against certain pathogens,

differences in skin microbial profiles and the chemical compositions of odour

samples.

Study description

Background summary

Malaria is caused by the malaria parasite. A malaria mosquito can spread this parasite when biting a human, if the mosquito has picked up the malaria parasite from biting someone else before. A mosquito needs blood for reproduction and some humans are more attractive to malaria mosquitoes than others. We think that malaria mosquitoes can smell someone's blood composition and that this is the basis for mosquito host preference.

Study objective

The main objective is to determine the relationship between human attractiveness to mosquitoes and mosquito egg production.

Secondary objectives are:
* To determine the differences in human blood composition on mosquito egg production between and within individuals
* To identify blood constituents that influence mosquito egg production

* To identify differences in skin microbial composition between individuals that are highly attractive and poorly attractive to mosquitoes
* To identify differences in volatile production between individuals that are highly attractive and poorly attractive to mosquitoes

Study design

This is a longitudinal observational study where each volunteer will be tested five times in total; one intake and four times every five weeks during a five-month period.
During the intake, each subject receives a questionnaire and will determine his blood type using a finger prick test. At all four research visits, odour samples, skin microbial samples, blood samples and a questionnaire will be taken. Next, each subject will feed 20 not-infectious mosquitoes from the arm during 10 minutes. These mosquitoes have not been in contact with the malaria parasite and thus are not infective.

Study burden and risks

Risk and burden for the subject will be minimal. The volunteers will be exposed to non-infectious malaria mosquitoes (the malaria parasite is not present in our lab), so itching of max. 20 mosquito bites is the largest burden. The only medical procedure will be taking blood samples where some pain may be involved. Our healthy subjects will not benefit from the study themselves, but the results will give more insight in mosquito host preference and mosquito reproduction. This may, in time, lead to new malaria mosquito control tools.

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

Man, 18-65 years old, healthy

Exclusion criteria

Woman, smoking, skin diseases such as eczema, BMI above 25, known to be oversensitive to mosquito bites, regular use of medication, not available to visit during specific time intervals, thesis student at the Laboratory of Entomology, WUR

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Basic science

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	16-07-2020

Enrollment:	50
Type:	Actual

Ethics review

Approved WMO Date:	30-05-2019
Application type:	First submission
Review commission:	METC Wageningen Universiteit (Wageningen)
Approved WMO Date:	12-12-2019
Application type:	Amendment
Review commission:	METC Wageningen Universiteit (Wageningen)

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	NL68436.081.18