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Deconstructing the protective immunity of yellow fever virus 17D to inform flavivirus vaccine design, Yellow4FLAVI – Colombian Component

Submission date
24/06/2024

Recruitment status
Recruiting

Registration date
28/06/2024

Overall study status
Ongoing

Last Edited
28/06/2024

Condition category
Infections and Infestations

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
In areas where multiple flavivuruses are endemic, such as Colombia, serologic-based diagnosis of these viral infections is challenging due to cross-reactivity of human antibodies. These cross-reactive humoral responses can also result in different immunological outcomes of infections (affecting disease severity) or vaccination (affecting the quality of the elicited innate and humoral responses). The quality and dynamics of the human immune response to the yellow fever (YF) vaccine, YF17D, have been primarily characterized in inhabitants of regions that are non-endemic for other members of the Flaviviridae family. The extent to which pre-exposure to different flavivirus affects vaccine responses is unknown, and more so in endemic areas with overlapping circulation of multiple flaviviruses. In this project we will evaluate the systemic innate and adaptive response to YF vaccination (Stamaril) in a Colombian cohort of participants, residents of an urban metropolitan area endemic for Dengue virus, who seek YF vaccination for access to high risk YF areas.

Who can participate?
Healthy men or women between the ages of 25 and 59 years

What does the study involve?
Blood samples collected before and after YF vaccination will be analyzed for humoral and cellular surrogates of protection. Early antibody-dependent enahancement of innate responses will be explored in neutrophils.

What are the possible benefits and risks of participating?
Participants will not directly benefit from the results of this study. However, these results will generate important knowledge for the development of vaccines against other flaviviruses of public health importance such as dengue and Zika. Additionally, it will provide knowledge on effect of pre-exposure to dengue virus on the immune response to yellow fever vaccination, which is part of the Colombian program for extended immunization.

Due to the nature of the clinical procedures, this study represents a risk greater than the minimum according to Colombian guidelines (Resolution 8430 of 1993), and minimum risk according to international requirements (Code of Federal Regulations – Requirements 2018, Title 45, part 46 , USA). Since this is a project co-executed by CIDEIM and with collaborators in Europe, the international classification is accepted, with this study being designated as minimal risk.

Where is the study run from?
Centro Internacional de Entrenamiento e Investigaciones Médicas - CIDEIM (Colombia)

When is the study starting and how long is it expected to run for?
January 2024 to December 2028

Who is funding the study?
European Union - Horizon Europe

Who is the main contact?
Maria Adelaida Gómez, mgomez@cideim.org.co

Contact information

Type(s)
Public, Scientific, Principal Investigator

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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
CIEIH-1336

Study information

Scientific Title
Deconstructing the protective immunity of yellow fever virus 17D to inform flavivirus vaccine design, Yellow4FLAVI – Colombian Component

Acronym
Yellow4FLAVI-Colombia

Study objectives
Pre-exposure to Dengue virus (DENV) infection alters the innate and adaptive immune responses to vaccination against the yellow fever virus.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 31/05/2024, CIEIH (Calle 18 # 122-135, Edificio O, CIDEIM, Cali, 760008, Colombia; +57-602 5552164; ccollazos@cideim.org.co), ref: CIEIH-1336

Study design
Single center observational longitudinal study

Primary study design
Observational

Secondary study design
Longitudinal study

Study setting(s)
University/medical school/dental school, Other

Study type(s)
Other

Participant information sheet
No participant information sheet available

Health condition(s) or problem(s) studied
Healthy donors with and without prior history of dengue virus infections, who receive the yellow fever vaccine (YF17D).

Interventions
In this observational study, the innate and adaptive immune response to YF vaccination will be evaluated in a Colombian cohort of participants, residents of an urban metropolitan area endemic for DENV. The design will be an observational longitudinal clinical study that will include the following groups of participants:

Group 1) People who wish to receive the yellow fever vaccine YF17D (Stamaril)
Group 2) People not vaccinated against yellow fever. Samples obtained from unvaccinated people will be used for standardization processes of laboratory protocols.

Pre-exposure to DENV will be evaluated by serological and neutralization tests. Following PAHO and Colombian guidelines for vaccination against yellow fever, participants will be immunized with the Stamaril vaccine. Samples and sampling time points will be as follows: pre-vaccination (D0-pre), 1h post-vaccination (D0-post), day 3 post-vaccination (D3), and D28 post-vaccination. For those with availability for additional follow-ups, two visits will be scheduled, one in D14 and another in year 1 post-vaccination (Y1). 100mL of peripheral blood will be obtained at each visit, except on D0, in which 150mL will be taken. Additionally, a complete medical examination will be performed and adverse reactions to the vaccine will be evaluated. Electronic data capture will be used to collect information and will be verified through clinical follow-up. Each visit will last approximately 1 hour.
Innate and adaptive immune responses will be contrasted among study groups for samples collected each time point.

Intervention Type
Biological/Vaccine

Pharmaceutical study type(s)
Pharmacodynamic

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
F17D (Stamaril)

Primary outcome measure
Neutrophil, T cell and B cell response to YF17D measured by blood test at baseline, days 3 and 28 after vaccination

Secondary outcome measures
Neutrophil, T cell and B cell response to YF17D measured by blood test 14 days and 1 year after vaccination

Overall study start date
01/01/2024

Completion date
31/12/2028

Eligibility

Key inclusion criteria
Vaccinees:
1. Men or women between the ages of 25 and 59 years
2. Completion of the process and signing of informed consent
3. Availability to carry out follow-up visits at least D3 and D28

4. Intention to get vaccinated against YFV
5. No contraindications for vaccination against YF according to the MinSalud survey applied in the vaccination service

Unvaccinated:
6. Men or women between the ages of 25 and 59 years
7. Completion of the process and signing of informed consent

Participant type(s)
Healthy volunteer

Age group
Adult

Lower age limit
25 Years

Upper age limit
59 Years

Sex
Both

Target number of participants
120

Key exclusion criteria
1. Pregnant women identified by rapid urine test or who are breastfeeding. This population will not be included because pregnancy induces changes in the immune system, which introduce an important confounder for the analysis of the results.
2. Previous vaccination against yellow fever manifested orally or with evidence of a vaccination card.
3. Known allergies to eggs or their components.
4. Temperature >38°C on the day of recruitment into the study
5. Acute illness (with or without fever) on the day of study recruitment.
6. Vaccination against another infectious agent less than 30 days before yellow fever vaccination
7. History of use of immunosuppressants or immunomodulatory drugs.
8. History of previous or suspected immune dysfunction. These include, but are not limited to: liver disease, diabetes mellitus and immunodeficiencies, thyroid disease, vitiligo, cancer, diabetes, HIV infection, rheumatoid arthritis, thymus disease, (includes thymectomy), renal or chronic failure, psoriasis, diseases autoimmune, multiple sclerosis, myastheniagravis, thymus tumor or removal.
9. History of known anaphylactic or allergic reactions.
10. Administration of immunoglobulins or blood products three months before vaccination or planned during the study
11. Be receiving current treatment for any infectious disease
12. History of tumoral diseases.

Date of first enrolment
01/07/2024

Date of final enrolment
01/07/2027

Locations

Countries of recruitment
Colombia

Study participating centre
Centro Internacional de Entrenamiento e Investigaciones Médicas - CIDEIM
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Sponsor information

Organisation
Centro Internacional de Entrenamiento e Investigaciones Medicas

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Sponsor type
Research organisation

Website
http://www.cideim.org.co/cideim/

ROR
https://ror.org/003s20294

Funder(s)

Funder type
Government

Funder Name
HORIZON EUROPE Framework Programme

Alternative Name(s)
Horizon Europe, Horizon Europe Programme, Framework Programme, Horizon Europe, EU Framework Programme, Horizon

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location

Results and Publications

Publication and dissemination plan
Planned publication in a peer-reviewed journal

Intention to publish date
31/12/2029

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study will be stored in a non-publicly available repository (CIDEIM repository), and will be made available only upon request when the full dataset will be collected and analyzed, and contingen upon approval for use by CIDEIM IRB. Identifiable information will not be included in the study data or paper data collection forms (CRFs), electronic files, or the electronic database, except for identification card numbers necessary to identify individuals in the field, and to link data from consecutive study visits. These numbers will not be included in the data sets for analysis. All data will be stored in CIDEIM databases, complying with institutional guidelines for data management.
For further information please contact Maria Adeladia Gómez at mgomez@cideim.org.co.

IPD sharing plan summary
Stored in non-publicly available repository, Available on request