DMP title

Project Name C14/21/092 - DMP title
Project Identifier DMP_C14/21/092
Grant Title C14/21/092
Principal Investigator / Researcher Peter Hespel
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Description The research project has to be considered primarily from the perspective of fundamental research. The project consists of 3 work packages (WPs) involving both in-vitro experiments as well as clinical trials in healthy volunteers aiming to investigate the effect of intermittent exogenous ketosis on de novo angiogenesis and epigenetic regulation in skeletal muscle during exercise and training. In WP1, we characterize the epigenetic mechanisms by which ketone bodies may impact the adaptive response to exercise in muscle cells. In WP2, we assess the effect of intermittent exogenous ketosis on muscle and endothelial cells during muscular degeneration and rehabilitation in healthy volunteers. In WP3, we determine the effect of intermittent exogenous ketosis on the muscular adaptive response to endurance training in healthy volunteers. These data are acquired to investigate the intended research questions and to allow publication in high-impact journals.
Institution KU Leuven

1. General Information

Name of the project lead (PI)

Peter Hespel

Internal Funds Project number & title

C14/21/092 - Intermittent exogenous ketosis during exercise and training: exploring the role of de novo angiogenesis and epigenetic regulation in muscular adaptation

2. Data description

2.1. Will you generate/collect new data and/or make use of existing data?

- Generate new data

2.2. What data will you collect, generate or reuse? Describe the origin, type and format of the data (per dataset) and its (estimated) volume. This may be easiest in a numbered list or table and per objective of the project.

Microscopy images	.tif	5 GB	Transmitted-light microscopy of human m. vastus lateralis biopsies
Western blot images	.tif	1 GB	Western blot of human m. vastus lateralis captured by western blot imaging system
qPCR results	.xls	500 MB	Gene expression analyses of human m. vastus lateralis biopsies using real-time PCR device
Elisa results	.xls	1 GB	Elisa analyses of venous blood samples from healthy volunteers
Sequencing data	.xls	3 GB	Results from single-cell ATAC-seq and RNA-seq
Numeric data (exercise performance, questionnaires, dietary intake, results of biochemical analyses)	.xls	20 GB	Three human clinical trials involving normobaric hypoxia.

3. Ethical and legal issues

3.1. Will you use personal data? If so, shortly describe the kind of personal data you will use. Add the reference to the file in KU Leuven's Record of Processing Activities. Be aware that registering the fact that you process personal data is a legal obligation.

Yes

Privacy Registry Reference: G-2021-4375

Short description of the kind of personal data that will be used: age, gender, weight, height, telephone number, e-mail address, health data (exercise performance parameters), metabolites and hormones in the blood (ketone concentrations, glucose, lactate, energy metabolism, adrenergic system, VEGF), single-cell gene expression and sequencing, and protein content in the m. vastus lateralis.

3.2. Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, add the reference to the formal approval by the relevant ethical review committee(s).

Yes, S66150

3.3. Does your research possibly result in research data with potential for tech transfer and valorisation? Will IP restrictions be claimed for the data you created? If so, for what data and which restrictions will be asserted?

No

3.4. Do existing 3rd party agreements restrict dissemination or exploitation of the data you (re)use? If so, to what data do they relate and what restrictions regarding reuse and sharing are in place?

No

4. Documentation and metadata

4.1. What documentation will be provided to enable understanding and reuse of the data collected/generated in this project?

1. Microscope. The following information will be noted: dimensions, image types, bit-depth, pixel sizes and microscopy settings. The methodology and protocol will be described in detail in the lab book. A ReadMe file of the image collection will be written.
2. Biochemical analyses (western blot, qPCR, elisa). The methodology and protocol will be described in detail in the lab book. The following information will be noted: capture settings, amount
of sample loaded, primers, elisa kits with inclusion of standards and controls and antibodies (company and #).
3. Muscle and blood samples. The samples will be stored according to the policy of the UZ / KU Leuven biobank.
4. All in-vivo measurements (questionnaires, exercise performance, functional performance). Details on the testing procedures (protocol, climate conditions) and the measurements (devices, date, time) will be described in detail in a .xls file.

4.2. Will a metadata standard be used? If so, describe in detail which standard will be used. If not, state in detail which metadata will be created to make the data easy/easier to find and reuse.

Yes

- Microscopy images: OME-XML
- Statistical analyses: metadata of database in SPSS
- For each clinical trial one general .xls file will be generated including all data.

5. Data storage and backup during the project

5.1. Where will the data be stored?

We will anonymize the data of all clinical trials. The anonymization file will be stored on the personal
OneDrive of Prof. Peter Hespel. All data files will be stored on a shared OneDrive (shared between Prof. Peter Hespel, Dr. Chiel Poffé and Drs. Ruben Robberechts). These files will be time-stamped.

5.2. How will the data be backed up?

The data will also be stored on the shared drive (I drive) of the research group which is secured and

automatically backed-up on a daily basis by the ICT services at the department.

5.3. Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely. If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.

There is currently 1810 GB free space on our OneDrive and 0.92 TB on the shared I drive.

5.4. What are the expected costs for data storage and backup during the project? How will these costs be covered?

No expected costs. We will use the OneDrive and the I folder which are both provided at no cost by the institution (KU Leuven).

5.5. Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

The OneDrive and I-drive are only accessible for the designated persons.

6. Data preservation after the end of the project

6.1. Which data will be retained for the expected 10 year period after the end of the project? If only a selection of the data can/will be preserved, clearly state why this is the case (legal or contractual restrictions, physical preservation issues, ...).

All data will be retained for a period of 10 years after the end of the project.

6.2. Where will these data be archived (= stored for the long term)?

The data will be stored on the university's central servers (with automatic back-up procedures) for at
least 10 years, conform the KU Leuven RDM policy.

6.3. What are the expected costs for data preservation during these 10 years? How will the costs be covered?

The central server is accessible at no cost.

7. Data sharing and re-use

7.1. Are there any factors restricting or preventing the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions or because of IP potential)?

No

7.2. Which data will be made available after the end of the project?

Anonymized data will be made available upon reasonable request to Prof. Peter Hespel.

7.3. Where/how will the data be made available for reuse?

- Upon request by mail

Data will be available on request after signing a data sharing agreement.

7.4. When will the data be made available?

- Upon publication of the research results

7.5. Who will be able to access the data and under what conditions?

All raw data are available for everyone upon reasonable request.

7.6. What are the expected costs for data sharing? How will these costs be covered?

No expected costs.

8. Responsibilities

8.1. Who will be responsible for the data documentation & metadata?

Prof. Peter Hespel

8.2. Who will be responsible for data storage & back up during the project?

Prof. Peter Hespel

8.3. Who will be responsible for ensuring data preservation and sharing?
Prof. Peter Hespel

8.4. Who bears the end responsibility for updating & implementing this DMP?
The end responsibility for updating and implementing the DMP is with the supervisor.