DMP title

Project Name Understanding the role of plant proteins in the structure of emulsified meat analogues - DMP title

Project Identifier 1S29922N

Principal Investigator / Researcher Quinten Masijn

Description This research aims to a) optimize the extraction procedures of 3 plant proteins (potato, quinoa, mung bean) towards both yield and techno-functional properties b) gain insights into the aggregation and gelation properties of these extracted plant proteins c) understand the emulsion properties of these extracted plant proteins d) gain insights in the influence of protein source, protein content and oil content on textural properties of emulsified meat analogue model systems e) compare textural properties of emulsified meat analogue model systems based on the extracted proteins to a cooked sausage reference

Institution KU Leuven

1. General Information

Name applicant

Quinten Masijn

FWO Project Number & Title

1S29922N

Understanding the role of plant proteins in the structure of emulsified meat analogues

Affiliation

- KU Leuven

Promotor: Ilse Fraeye (ZAP) (Research group for Meat Technology and Science of Protein-rich Foods)

2. Data description

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

- Generate new data

Describe in detail the origin, type and format of the data (per dataset) and its (estimated) volume. This may be easiest in a table (see example) or as a data flow and per WP or objective of the project. If you reuse existing data, specify the source of these data. Distinguish data types (the kind of content) from data formats (the technical format).

All data is collected by experiments of the (processed) 3 raw materials and are comprised of images or numerical data.

Type of data	Format	Volume	Creation	Storage
TOTAL		+- 30 GB		Research group of Meat Technology and Science of Protein-rich Foods (MTSP) sharepoint, accessible by Quinten Masijn (QM), Ilse Fraeye (IF) and research team members
OVERALL Numerical calculations of raw data	.xls	1 GB	based on raw data input	MTSP sharepoint , accessible by Quinten Masijn (QM), Ilse Fraeye (IF) and research team members
OVERALL Statistics	.spss	1 GB	based on processed data	MTSP sharepoint, accessible by QM, IF and research team members

WP1 Numerical protein concentrations	text + .xls	1 MB	Titrino 785 DMP / calculation of masses	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members
WP1 Images of SDS-page gels	.tif .jpeg	1 GB	ImageJ	temporarily on equipment connected password protected PC + MTSP sharepoint + long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP1 Rheology tests	RSL	200 MB	AR 2000 ex rheometer	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP1 Numerical DSC data	RSL	100 MB	Q2000 DSC	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.1 Numerical protein solubility	text + .xls	10 MB	Calculation of masses	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.1 Numerical zeta potential ~ IEP	.xls	10 MB	Nanobrook Omni	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.1 Numerical size measurement DLS	.xls	10 MB	Nanobrook Omni	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.1 Numerical solubilities of protein extracts in different solvents	text + .xls	1 MB	Calculation of masses	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members

WP2.1 Numerical ANS fluorescence	.xls	1 MB	Shimadzu RF-1501	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.1 Light Microscopy images	.jpeg	5 GB	BX-41 microscope and C-4040 Zoom digital camera	temporarily on SD card +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.2 Numerical least gelling conc	text + .xls	1 MB	Calculation of masses	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.2 SDS-PAGE gel images	.tif .jpeg	1 GB	ImageJ	temporarily on equipment connected password protected PC + MTSP sharepoint+long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.2 Rheology	RSL	200 MB	AR 2000 ex rheometer	temporarily on equipment connected password protected PC+ MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.2 Numerical water holding capacities	text + .xls	1 MB	Calculation of masses	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.2 Numerical TPA analyses	.xls	50 MB	Lloyd TPA analyser	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP2.2 Light Microscopy images	.jpeg	5 GB	BX-41 microscope and C-4040 Zoom digital camera	temporarily on SD card +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members

WP2.2 CLSM	.jpeg	1 GB	to be determined	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.1 Numerical oil binding capacity	text + .xls	1 MB	Calculation of masses	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.1 Pendant drop images + calculations	jpeg. + .xls	1 GB	CAM 200	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.1 Numerical size measurement DLS	.xls	10 MB	Nanobrook Omni	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.1 Numerical zeta potential	.xl	10 MB	Nanobrook Omni	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.1 Numerical emulsion capacity	.xls	1 MB	Conductometer 912 Metrohm	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.1 Numerical emulsion capacity	.xls	1 MB	Lumifuge	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.1 Numercial emulsion activity index	.xls	1 MB	Calculation of absorbance	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members

WP3.1 SDS-PAGE gel images	.tif .jpeg	1 GB	ImageJ	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.2 Rheology	RSL	200 MB	AR 2000 ex rheometer	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.2 Numerical drip losses	text + .xls	1 MB	Calculation of masses	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.2 Light Microscopy images	.jpeg	5 GB	BX-41 microscope and C-4040 Zoom digital camera	temporarily on SD card +MTSP sharepoint+ long term KU Leuven provided online storage, accesible by QM, IF and research team members
WP3.2 CLSM	.jpeg	1 GB	to be determined	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP3.2 SDS-PAGE gel images	.tif .jpeg	1 GB	ImageJ	temporarily on equipment connected password protected PC +MTSP sharepoint+long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP4 Rheology	RSL	200 MB	AR 2000 ex rheometer	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP4 Numerical drip losses	text + .xls	1 MB	Calculation of masses	MTSP sharepoint + KU Leuven provided online storage, accessible by QM, IF and research team members

WP4 TPA	.xls	1 MB	Lloyd TPA analyser	temporarily on equipment connected password protected PC +MTSP sharepoint+long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP4 Light Microscopy images	.jpeg	5 GB	BX-41 microscope and C-4040 Zoom digital camera	temporarily on SD card +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members
WP4 CLSM	.jpeg	1GB	to be determined	temporarily on equipment connected password protected PC +MTSP sharepoint+ long term KU Leuven provided online storage, accessible by QM, IF and research team members

3. Legal and ethical issues

Will you use personal data? If so, shortly describe the kind of personal data you will use. Add the reference to your file in KU Leuven's Register of Data Processing for Research and Public Service Purposes (PRET application). Be aware that registering the fact that you process personal data is a legal obligation.

- No

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)

- No

Does your work 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

At this moment no such results are to be expected. However, if these would come up during the research work, KU Leuven Research and Development - Tech Transfer office will be consulted to provide guidance.

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 are in place?

- No

4. Documentation and metadata

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

Physical data

A hard copy lab notebook will be stored for at least 10 years after the ending of the project.

Digital data

Research methods and practices used will be noted in Standard Operating Procedures (.doc) file, updated whenever needed and placed in a dedicated shared folder.

For each analysis a separate Excel file (.xls) will be set-up consisting of at least:
1) a reference to SOP used

2) raw data as measured by the device, including metadata such as date, descripitive sample name, etc.
3) processing of data
For all data generated in a program other than Excel, a dedicated folder will be used where these raw data files are saved. If processing of these data is needed, a copy will be made to another folder to avoid irreversible changes in the raw data.

Will a metadata standard be used? If so, describe in detail which standard will be used. If no, state in detail which metadata will be created to make the data easy/easier to find and reuse.

- No

No metadata standard will be used.
However, each procedure will be performed according to a SOP, stored in the research team's online sharepoint with an integrated version history. Each sample will have a reference to the SOP used. In addition, a meaningfull, unique description of the sample, analysis date and important additional remarks (unexpected changes to SOP) are included.

5. Data storage and backup during the FWO project

Where will the data be stored?
All data will be stored on a dedicated Sharepoint site, provided by the university of KU Leuven and accesible through a Teams channel managed by professor Ilse Fraeye. Parts of this channel can be shared with other researchers or parties if necessary. The version history of this set-up makes it possible to see at any time who made which changes at what time.
Because the project contains no sensitive or personal data, the data does not need to be anonymised.

How is backup of the data provided?
The used sharepoint site foresees in back-ups for calamities.

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.

- Yes

The dedicated Sharepoint site has a large storage capacity, more than enough for the estimated 30 GB of data being generated during this research project.

What are the expected costs for data storage and back up during the project? How will these costs be covered?
Because the data storage on Sharepoint site is standard provided by the university, no additional costs are to be covered. However, in case unexpected costs will emerge, these costs will be covered by the project or lab budget whenever needed.

Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?
The dedicated Teams channel has a build-in security feature. Supported by the university, the data will not be accessible by unauthorized persons. Furthermore, no sensitive data will be stored, so even a (unlikely) breach of this security will have a minor impact.

6. Data preservation after the FWO project

Which data will be retained for the expected 5 year period after the end of the project? In case only a selection of the data can/will be preserved, clearly state the reasons for this (legal or contractual restrictions, physical preservation issues, ...).
All data will be preserved for at least 10 years after the end of the project.

Where will the data be archived (= stored for the longer term)?
The data will be stored on the university's large archive servers (with automatic back-up procedures) for at least 10 years, conform the KU Leuven RDM policy.
The physical notebooks will be kept in a dedicated locker of the applicant's research group for a

minimum of 10 years.

What are the expected costs for data preservation during the retention period of 5 years? How will the costs be covered?
The annual cost of the archive server amounts to 12 euro per 100 GB. Therefore the cost related to storage of the data related to this project (~ 30 GB) is estimated to be 4 euros per year. This cost will be covered by the applicant's research lab.

7. Data sharing and reuse

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)?

- No

Which data will be made available after the end of the project?
All published data will be made available the latest at the end of the project.

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

- In an Open Access repository
- In a restricted access repository
- Upon request by mail
- Other (specify):

Standard the data will be available to Ilse Fraeye and thus to the researchers of the applicant's research group through the Sharepoint site.
However, external parties could ask for this data by sending a mail request to Ilse Fraeye, after which they could receive a copy.
All data used in publications will be shared in open acces format through Lirias.

When will the data be made available?

- Upon publication of the research results

Who will be able to access the data and under what conditions?
Researchers of the applicant's research group are able to access the data at any time by accessing the dedicated Teams channel. Further more, all data related to published articles will be shared through their publication.

What are the expected costs for data sharing? How will the costs be covered?
The costs are expected to be non-existent. If there would be a publication in Open Acces Journal, the project funding will be used to cover the costs.

8. Responsibilities

Who will be responsible for data documentation & metadata?
Quinten Masijn

Who will be responsible for data storage & back up during the project?
Quinten Masijn
Ilse Fraeye

Who will be responsible for ensuring data preservation and reuse ?
Ilse Fraeye

Who bears the end responsibility for updating & implementing this DMP?
Ilse Fraeye