

Reference Number: 2134

-Date: 22-Jan-2019

-Name: Frederik Lermyte

Division: Trace Metals in Medicine Lab

Supervisor: Joanna Collingwood

Title of Procedure: Incubation of amyloidogenic peptides, e.g. amyloid beta with iron(III)/nitrilotriacetate complex

Location: Engineering, room F.0.13A

Summary of Activity: Investigate the effect of binding of the iron(III) cation to amyloidogenic peptides, e.g. amyloid beta, after 'loading' these peptides with iron by the nitrilotriacetate chelator.

Description of Procedures: Peptides will be dissolved in water or other non-hazardous buffers at a low micromolar concentration. A similarly low concentration of iron(III)-nitrilotriacetate complex will be added to some of the samples in order to allow transfer of the iron(III) cation to the peptide. This will allow us to investigate the effect of the metal on peptide oligomerisation and fibril formation.

Substances Used: Amyloid beta, water, iron(III)chloride, nitrilotriacetic acid

Quantities and frequency of use: Experiment will be performed on a scale smaller than one millilitre per sample. Total amount of iron(III)acetate used will be less than one milligram. Experiment to be carried out once in the short term, with possible follow-up in the future.

Identify hazards: Eye irritation (Category 2), H319
Carcinogenicity (Category 2), H351

Inhalation: Yes

Ingestion: Yes

Splash in eyes or mouth: Yes

Identity of groups of workers with increased risk: Workers carrying out this procedure

Less hazardous substance: No, several other iron chelators were tested unsuccessfully, as they bind too strongly and/or block all available ligand sites, making the iron unavailable for the peptide. From experience and from the literature, we know that nitrilotriacetic acid is suitable for this purpose.

Measures to control the risk: Risk to people not involved in the work will be minimal, as the work will be carried out in access-controlled lab.

Engineering control measures: Work to be carried out in a fume hood.

Lab coat: Yes

Gloves: Yes

Eye or Face: Yes, safety goggles

Other: N/A

Containment: N/A

Additional control measures: N/A

Waste disposal procedure: Waste to be collected in a dedicated container and removed as chemical waste.

Emergency procedures: N/A

Checks on control measures: Check condition of fume hood and PPE before commencing this experiment.

Environmental monitoring: N/A

Health surveillance required: N/A

Training requirements: N/A

Name of Assessor: Frederik Lermyte

Signed: 22/01/2019

Name of Reviewer: Joanna Collingwood

Personnel Name:	Personnel Position:	Personnel Experience:
Frederik Lermyte	Postdoctoral Research Fellow	Seven years full-time chemistry research

RECORD OF PERSONNEL INVOLVED

Name	Position and Qualifications	Experience	Start Date	Finish Date
Frederik Lermyte	PDRA	8 year's lab experience	Feb 2017	Jan 2020

Reviewed 11/05/2021: Frederik Lermyte is now an Honorary Fellow and not an active user of the lab. Newer members of the laboratory will need to become familiar with the content so that they can be formally added to this approval by Prof. Collingwood before performing the procedure.



11th May 2021