	Flinders University **Safe Work Method Statement** **Dextran Sodium Sulfate (DSS) Treatment in Rats 18/06/19**	
		**College of Medicine and Public Health Animal Facility**

SWMS Number	RA Number	RA Score	
SWMS- 2.10	RA- 2.10	High	
Contact Person	**SWMS prepared by**	**AWC Approval Date**	**Review Date**
Roxanne Collingwood	Dr Ying Hu	18/06/2019	June 2021

Contents

The SWMS **Dextran Sodium Sulfate (DSS) Treatment in Rats** contains the following sections:

Legislation

- *Australian Code for the Care and Use of Animals for Scientific Purposes 8th Ed.*
- *Animal Welfare Act 1985.*
- *Animal Welfare Regulations 2012*
- *Gene Technology Act 2000* (the Act)
- *Gene Technology Regulations 2001*
- *Work Health and Safety Regulations 2012*

University Policy

- Work Health and Safety Policy 2013
- Responsible Conduct of Research Policy 2016
- NHMRC Guidelines

Local Policy

Use of the College of Medicine and Public Health Animal Facilities by all staff and researchers of the College of Medicine and Public Health, Flinders University, is subject to awareness of, and adherence to the following:

Research Involving Animals:

- The University holds a licence for the use of animals for teaching and research purposes. To satisfy the requirements of the licence, anyone wishing to undertake teaching and research using animals must submit a proposal to the Animal Welfare Committee. No work with animals may commence until written approval has been received from the Animal Welfare Committee. Standardised application forms for Research and Teaching can be found on the Flinders University website listed below. It is your responsibility to regularly check this site for updates to guidelines, forms etc

http://www.flinders.edu.au/research/researcher-support/ebi/animal-ethics/animal-ethics_home.cfm

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- **All staff and students involved in animal research must complete Animal Ethics Online Training (AEOT) and must also regularly attend Animal Researcher Information Sessions (ARIS).**

Safe Work Method Statement

Refer to Risk assessments, Safe Work Method Statement for chemicals, processes and plant equipment where appropriate. All projects must have an accompanying Risk Assessment signed by the Animal Facility Manager

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SWMS 2.0 Rat- Sexing, Handling, Restraint and Ear Notching
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SWMS 2.1 Rat- Injection Techniques
RA 2.1 Rat- Injection Techniques
SWMS 2.2 Rat – Blood collection
RA 2.2 Rat – Blood collection

Personal Protective Equipment Required

The following personal protective equipment (PPE) must be worn throughout the entire procedure

- **Gloves**
- **Gown**
- **Mask**
- **Hair Net**

- **Shoe Covers**
- **Respirator**
- **Goggle**

Hazards and Controls

- **Use only in well ventilated areas and use scavenge systems**
- **Do not breathe gas/fumes/vapour/spray**
- **Animal bites- training, demonstrate competency, adhere to SWMS**
- **Animal Scratches- training, demonstrate competency, adhere to SWMS**
- **Needle Stick- DO NOT recap needles, dispose immediately into sharps containers, adhere to SWMS**
- **DSS related hazards**

1. Spill DSS - If a spill occurs, close doors ring 33# and alert others in the area, and remove all contaminated clothing immediately if spilt on body.
2. Contact with eye and skin- wear eye protection and PPE.

Ensure that you are aware of the locations of the following:

- **Spill Kit**
- **Fire Extinguisher**
- **Eye Wash**
- **Exits**

Risk Assessment and MSDS (Material Safety Data Sheet) - Ensure that you have read and understood that DSS may cause skin, respiratory tract irritation and mouth, throat and stomach irritation and may cause allergic skin reaction.

- **Check for safety and electrical compliance**
- **Ensure that you have read and understood the Risk Assessment and Safe Work Method Statements**
- **Obtain training before conducting DSS treatment**

List of Equipment Needed

- **Ensure that you have read and understood the Risk Assessment and Safe Operating Procedure**
- **Ensure use only with adequate exhaust ventilation**
- **Ensure remove or wash contaminated clothing before use**
- **Ensure wear personal protective equipment**

Hazardous waste – contact chemical waste contractor of Spotless-Flinders Medical Centre to collect the dispose DSS solution and bottles.

General Information

- **All procedures are to be performed by trained competent staff.**
- **Training is available from senior research scientist from Gastoenterology epithelial biology lab.**

Chemical Reagents

- Dextran Sodium Sulfate **(**DSS) from MP Biomedicals Australasia Pty Limited, 100g bottle (CAS No. 160110).
- 2% working concentration solution.

Notes/ Precautions/ Potential Problems

- Store in original containers.
- Keep containers securely sealed.
- No naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Dispose used syringes, tips and gloves (all used items) into purple bins.

Equipment/ Materials

- 10 little glass bottle (for DSS solution).
- Stable trolley for transporting DSS solution.

Method

Prepare Dextran Sodium Sulfate (DSS) solution for the injection:

1. Wear personal protective equipment before beginning any preparation of DSS solution.
2. Preparation of the DSS solution must be undertaken in a laboratory with adequate exhaust ventilation.
3. Make 2% DSS solution (i.e. DSS in distilled water), which can be stored at 4◦C for up to 1 week.
4. 2% DSS solution will be given to animals as drinking water for 5-7days.
5. The used bottle will be collected by chemical waste contractor of Spotless-Flinders Medical Centre.

Side Effects

- Rats will experience distress and will have diarrhoea, rectal bleeding, or loss of weight during the treatment of DSS, and one week after stopping DSS. Rats will be monitored twice daily during periods of DSS treatment, and one week post DSS, after which daily monitoring will be resumed.

References

- Carcinogenesis vol.31 no.10 pp.1734–1741, 2010 Mechanistic insight into the ability of American ginseng to suppress colon cancer associated with colitis.

- Carcinogenesis vol.31 no.4 pp.729–736, 2010 Tumor formation in a mouse model of colitis-associated colon cancer does not require COX-1 or COX-2 expression.
- Chemico-Biological Interactions 177 (2009) 128–136 Melatonin suppresses AOM/DSS-induced large bowel oncogenesis in rats.
- Le Leu RK, Young GP, Hu Y, Winter J, Conlon MA.Dig Dis Sci. 2013 Dec;58(12):3475-82. Dietary red meat aggravates dextran sulfate sodium-induced colitis in mice whereas resistant starch attenuates inflammation.

SWMS Review

This SWMS currently applies to the animals housed in the College of Medicine and Public Health Animal Facility. This SWMS will be reviewed 3 yearly, but also updated more frequently as policies, techniques and animal care requirements change.

Position	Name	Contact Details
Manager Animal Facility	Roxanne Collingwood	8204 4380 roxanne.collingwood@flinders.edu.au
Animal Welfare Officer	Lewis Vaughan	0450 424 143 awo@flinders.edu.au

Useful References

http://www.nhmrc.gov.au

http://www.adelaide.edu.au/ANZCCART/

http://www.flinders.edu.au/research/researcher-support/ebi/animal-ethics/animal-ethics_home.cfm

Any questions regarding the above guidelines and any technical advice/ assistance required can be directed to Animal Facility Manager.