Thioglycollate Induction of Inflammatory Cells in Mice

IACUC Standard Procedure
Effective Date: November 2023

UCSF Office of Research
Institutional Animal Care and Use Program

Description of procedure:

This procedure can be used to obtain activated inflammatory leukocytes from mice, or as an analytical procedure to compare rates of leukocyte accumulation in different strains of mice.

Supplies recommended:

1. 3 % wt/vol thioglycollate medium (Sigma) in double-distilled water (ddH2O), autoclaved, prepared from dehydrated thioglycollate medium and sterile saline water. Thioglycollate solution needs to be wrapped with aluminum foil to avoid light and be placed at room temperature to age for several weeks until it turns to brown in color. The aging process is critical to the ability of thyioglycollate to induce peritonitis.
2. Needles: Small gauge: 23-30G
3. Syringes: 5 cc

Procedure:

Administration:

- Fill a 5cc syringe with 3% thioglycollate medium (3% wt/vol of an autoclaved stock prepared from dehydrated thioglycollate medium and sterile saline water). Attach a 30G needle and inject solution into the peritoneal cavity of each mouse.
- Dose volume: administer 2-3 ml to mice weighing ≥25 grams, administer 1-1.5ml to mice weighing < 25 grams.
- Anesthesia is not required for intraperitoneal injection. To avoid hitting any internal organs, inject the mouse right of center, approximately level with the knee and about 1 cm left of where the leg meets the torso.

The mice will be euthanized for collection of peritoneal inflammatory cells at various time points following injection. Leukocytes will accumulate rapidly in normal mice in response to the injection (e.g., large numbers of cells can be recovered after 24-48 hours). Some strains may require up to 4 days to produce adequate numbers of cells, so the study will last 1-4 days post-injection, after which animals are euthanized.

Monitor treated mice on a daily basis for signs of discomfort. Signs of discomfort could include hunched posture, ruffled fur or lack of movement around the cage. The body condition score index will also be used to evaluate the welfare of the mice.

Agents:

All agents administered to animals should be listed in the "Agents" section of the IACUC protocol.

Adverse effects:

Adverse effects should be listed in the “Adverse Effects” section of the IACUC protocol.

Examples of potential adverse effects include: Peritonitis, lethargy, weight loss, hunched posture, ruffled fur and lack of movement around the cage.

Literature search:

Literature search was performed for refinement of this Standard Procedure in June 2023:

Key Words	Search Site	Years Covered
mouse) AND (animal)) AND (model)) AND (thioglycollate)) AND (alternative)	Pubmed	1990-2023

References:

Irving C. Allen (ed.), Mouse Models of Innate Immunity: Methods and Protocols, Methods in Molecular Biology, vol. 1031, DOI 10.1007/978-1-62703-481-4_4, © Springer Science+Business Media, LLC 2013