

WVU IACUC - APPROVED SOP: Streptozotocin (STZ) for Diabetes Induction in Animals

Background

Streptozotocin (STZ) is an agent which is used to induce diabetes in animals, but can have this effect in humans as well. It is toxic and a mutagen.

Storage and Preparation

Streptozotocin (STZ) is obtained commercially from a chemical company. Upon arrival it should be stored in a container that is tightly closed in a -20 Celsius freezer. Prior to preparation, the following Personal Protective Equipment (PPE) should be worn in the laboratory: safety glasses or goggles, double nitrile gloves, and a disposable laboratory coat. All work must be performed under a fume hood. Solutions are made from the powder as described in the Investigator's protocol. All STZ, whether in solution or in powder form, should be in nonfracturing secondary containment (i.e. closed ice bucket) while being transported.

Spill Control

Proper PPE should be used including an N-95 respirator and/or equivalent when cleaning up a spill. The PPE for a spill clean up is the same as described above in Storage and Preparation. When working with STZ in the powder form, an inhalation hazard, avoid creating dust. In the event of a powder or liquid spill the material needs to be wiped up with a wet absorbent cloth. The area of the spill should be cleaned with soap and water. Once the spill has been properly cleaned, remove gloves, place them with the waste and wash hands thoroughly. All waste generated should be disposed of as hazardous waste. It must be labeled and placed into a hazardous waste container for disposal. All hazardous waste will be disposed of through Clean Harbors via EH & S. The investigator is responsible for all waste removal in the laboratory. All spills of any kind must be reported to EH & S. On the main campus, the phone number is 304-293-3792. The Safety Office at the Health Sciences Center phone number is 304-293-6924.

Injections of Animals with STZ in the Vivarium

Required PPE:

- 1. Safety Glasses**
- 2. Double Nitrile Gloves**
- 3. Laboratory Coat and Shoe covers**
- 4. Bouffant**
- 5. N-95 Respirator or PAPR**

Signage (required)

Signage must be placed on animal room doors and on cages. Each cage should have a hazard notice stating “**STREPTOZOTOCIN (STZ) Mutagen/Toxin**”, the amount given, and the duration and frequency of administration on a fluorescent orange cage tag. The tag is removed with a cage change after 72 hours from the last STZ injection.

Administration

Streptozotocin (STZ) should only be administered under a class 2A or 2B Biological Safety Cabinet (BSC) in the vivarium. The compound should be maintained in secondary containment at all times except during injection of the animal. The needles used for STZ injection will be disposed of in approved sharps containers immediately following use. These needles will never be bent, sheared, or recapped. The area(s) in which STZ is administered will be cleaned immediately following each task completion utilizing either Virkon or Clidox or another appropriate disinfectant which will inactivate the STZ. Animals should be properly restrained when injecting the STZ. It may be necessary to anesthetize the animal with Isoflurane or an equivalent in order to prevent injury to the animal and possible needle sticks to the technician. Notify care staff/ supervisor when injections are being made and the duration of the injections.

Animal Bedding and Cage Changes

Proper signage must be placed on the cages as described above. A special care form will be on file in the animal room. Each cage should have a hazard notice on a fluorescent orange tag stating “**STREPTOZOTOCIN (STZ) Mutagen/Toxin**”, the amount given, and the duration. It is recommended that a cage change be done on the day of injection before the infection procedure. The Investigator **MUST** inform Vetservices via e-mail when animals are injected. Investigators who plan to change their own cages must inform OLAR staff via an e-mail to Vetservices when they have STZ bagged bedding waste for disposal. Notify OLAR for proper training in the event the investigator’s laboratory personnel will be performing STZ-laden cage changes. OLAR encourages research staff to change these cages, especially if they do not want OLAR to manipulate the cages. This would need to be stated with a cage tag marked “Do Not Manipulate”.

1. Bedding should **NOT** be changed for at least 72 hours after the last injection listed on the cage tag.
2. Transfer animals to a clean cage using proper PPE as described above.
3. Replace cage tops on cages. Soiled cages should be bagged and labeled as STZ cages on the first cage change post-injections.
4. Cages are taken to the cage wash area in the labeled bag (STZ Bedding); then the cages are removed and dumped using a proper dump station.
5. All bedding is dumped as normal waste.

Dead Animals

If an animal is found dead by the OLAR husbandry staff while the cage is tagged with STZ written on the cage card, OLAR Staff will contact the investigator during normal office hours and on weekends and holidays. Animal carcass can be discarded as normal animal carcass waste.