

SOP No: AHT 12

SUBJECT: To provide animal facility staff with instruction and direction for tail intravenous injection in the rodent. (May 2015)

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REASON FOR USE: All staff involved in the process of tail intravenous injection of rodents will be instructed in the correct handling of the animals and preparation of equipment for the procedure. Staff will be provided with training and will not undertake this procedure unless they are competent.

POLICY: This technique must only be performed by operators skilled in the technique.

PRECAUTIONS: Research technical staff are responsible for the intravenous injection procedure including the monitoring of the rodent whilst they are being heated. They must be competent in handling of rodents and using a restraint cone. The animals are to be monitored the whole time the heat is applied.

EQUIPMENT: Heat Lamp
Timer
Clean box w/o bedding
Clean box with bedding
Tissues
Restraint cone or cylinder
Masking tape
25g needles
1ml syringes
Intravenous solution required
70% Ethanol
Virkon and paper towel
PPE- Gloves, gown, mask, safety glasses (if toxic or carcinogen)
Beaker/container of warmed water no more than 40 degrees Celsius

PROCEDURE: Set up the work area by tearing 3 pieces of masking tape into 10cm lengths, use these pieces to tape the restraint cone flat to the bench on the two long sides and 1 piece along the bottom of the cone (The two long sides should be placed vertically and the short side horizontal) to the user.

Place 1 or two tissues into the restraint cone so the animal sits higher up in the cone to allow for a space for the technicians hand between the bench and the tail, if injecting mice.
Place 2 tissues next to the cone to use for homeostasis of the tail once it has been injected

Place a few tissues in the empty box to soak up the drops of blood (this will be used to transfer the injected mice into). Plug in a heat lamp and position it next to the clean box with bedding, if using heat lamp.

HEATING PROCEDURE

1. Via Heat Lamp

- Wearing the correct PPE, place the animal from their normal cage into the clean cage with bedding and place a lid on the top (not wire, will get too hot). More than 1 animal can be heated at a time.
- Then position the heat lamp 5-10cm away either on top of or by the side of the box and turn the heat lamp on and turn on the timer.
- Once 2 minutes has passed you can look at the vein to see whether vasodilation has occurred and if not leave the animal for a further 2-3 minutes.
- Turn the heat lamp off once the first animal has been removed but keep in mind that they may cool down and the heat lamp may need to be turned on after the second animal. They will only need heat for 2 minutes.

2. Via Warm water bath

- Place animal into the restraint prior to heating
- Once the animal has been restrained, place warm water into a container or beaker that is deep enough to immerse 2/3 of the tail.
- If hot water at 40 degrees is placed into the beaker, ensure the water has cooled so that you a thermometer is stable at this temperature for at least 10sec.
- Soak the tail for 10 sec.
- This procedure may be repeated as necessary.
- As water can cool quickly, the beaker water may need to be changed often.

INTRAVENOUS INJECTION PROCEDURE

1. Attach a 25G needle to a 1ml syringe.
2. Whilst the animal/s are starting to be heated draw up the required amount of solution required. It is very important to remove all air bubbles as this can cause an adverse reaction.

N.B To remove the air bubbles, draw the liquid down a small amount and then flick all the bubbles to the top with your finger half way down the syringe. Then move the liquid up and down slowly. This needs to be repeated until all air bubbles have been removed.


3. When the timer has sounded and the tails have vasodilated remove an animal from the heated box and gently slide the tail of the animal into the restraint. If you are an experienced animal handler you can also slide a leg into the restraint cone and this will hold the desired lateral tail vein straight.
4. Curl the tail over the forefinger and hold in place with the thumb so that the tail is horizontal to the bench and the lateral tail vein is straight keeping a firm hold of it. Spray a tissue with 70% ethanol and wipe the vein.
5. Start closer to the tip of the tail (distal) and if unsuccessful another attempt can either be made on the other lateral vein or proximal in the same vein.

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6. Place the needle so that it is horizontal to the tail and lines up with the vein with the bevel facing upwards.
7. Insert the bevel of the needle into the vein and then adjust the injecting arm slightly downwards to be horizontal with the vein and insert the needle no more than half way.
8. Once in the vein, push the plunger and slowly inject the solution.
9. If there is some resistance it is unlikely that the needle is in the vein. Remove the needle and attempt another injection. See no.5 if unsuccessful
10. Once the injection is complete slide the needle back but making sure the bevel is still in for 5 seconds. This ensures all of the solution will be in the circulation.
11. Then remove the needle and dispose in a sharps bin but still firmly holding the tail.
12. Grab a tissue and hold onto the injection site with slight pressure to achieve hemostasis and place in the empty box with tissues.
13. Repeat steps 4-12 if successful.
14. Once completed spray the bench with virkon solution and wipe off with paper towel to remove any blood spills and then spray with 70% ethanol.

RECOMMENDATIONS:

REVISED: 06.05.2015



CHAIR OF AEC

REFERENCES

1. Shimizu S. (2004). The Laboratory Mouse (Handbook of Experimental Animals). Chapter 32 pp 527-541
2. Wolfensohn, S. and Lloyd, M. (2013). In *Handbook of Laboratory Animals Management and Welfare* pp. 89-120. Wiley

