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Intra-venous injection [tail vein] in mice

SCOPE

Intravenous injection is a method of delivering substances directly into the vein.
Veins are fragile and once punctured can scar to make repeat injection difficult. This technique requires a high level of skill and practise to maintain competency. Up to 0.4mL can be injected into the tail vein of a 20g mouse. It is easier to perform this technique on larger and light coloured mice. The procedure can be repeated using other lateral vein. Do not attempt to do more than 4 i/v injections at weekly intervals in one mouse
Commonly used for bone marrow reconstitution following irradiation.

AUTHORISATION TO UNDERTAKE PROCEDURE

To perform this technique animal technician or investigator must be regarded as competent by BRC training assessor or approved in AEC protocol.

SPECIAL REQUIREMENTS/SAFETY

- Correct restraint of mouse
- Correct use of heat lamp
- Disposal of sharps into approved container
- Wear personal protective equipment

MATERIALS/EQUIPMENT

- 26G, 27G or 30G needle, or 29G insulin syringe
- 1mL or 0.5mL syringe
- Mouse restrainer
- Heat lamp
- Substance to be injected
- Alcohol wipes
- Sharps container for disposal

PROCEDURE

- Mice will need to be heated prior to injection to increase blood flow to the tail vein. Place mouse in box under heat lamp and follow procedure stated below under associated procedure/s.

- Fill syringe with the required amount of substance to be injected, ensuring all air bubbles are removed, and rest syringe on needle cap whilst preparing mouse for restraint
- Place mouse into restraint cone with tail easily accessible
- Hold tail with one hand and locate lateral tail vein
- Swab tail with alcohol to assist visualisation of vein
- With needle bevel up and needle almost parallel to the tail, insert needle through skin into the lower portion of the vein
- Gently inject, there should be little resistance on syringe plunger if needle is correctly placed in vein
- When injection completed withdraw needle, placing gentle pressure with finger and swab on injection site to prevent blood leaking out of vein
- If unsuccessful, a second attempt can be made above the failed point of entry, re-swab tail and repeat procedure
- Place back into box and monitor mouse for 15 minutes, or as specified in AEC approved protocol
- Dispose of needle in sharps bin.

MONITORING REQUIREMENTS

Mice observed for 15 mins following injection

EXPECTED RISKS

The tail vein may not be able to be visualised. If the needle is not situated correctly in vein the substance will not be delivered by intravenous route and this can potentially lead to necrosis of the tissues surrounding the injection site. If unsuccessful with attempts on the first lateral vein the other lateral vein can be used.

ASSOCIATED PROCEDURE/S

- To dilate vein take mice from IVC and place in new box without food or water and place box with mice under heat lamp in BRC Procedure Room B.
- The top of the box must be no closer than 20cm from the face of the globe, [approx. 40cm from bench top]
- The investigator/technician must be present in the room at all time when the mice are being heated.
- Set timer for 7 minutes
- Using thermometer measure temperature in the box – it takes 5 mins to get to 30 degrees.
- It takes 15 minutes to get to 35 degrees.
- When box temperature is 30 degrees move box so that only half the box is under the heat lamp. This will create a cooler area where mice can sit.
- The tail veins are dilated enough for injection at 7-8 minutes
- Temperature in the box must never exceed 39 degrees.
- Maximum time in box is 20 minutes

REFERENCES

Australian code for the care and use of animals for scientific purposes (8th Edition 2013)

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