How to: Harvest canine adipose tissue

Introduction

Autologous mesenchymal stem cells are implanted as a treatment of canine orthopaedic injuries. The recovery and expansion of stem cells is a service offered to veterinary surgeons who have been trained in the technology in accordance with the Veterinary Medicines Directorate (VMD). The use of stem cells in the UK is governed by the VMD and only a VMD authorised laboratory should be used. The protocol for harvesting of adipose tissue is shown here.

Technique

N.B. As the adipose tissue is delivered to the laboratory the day after it is obtained aspirations should only be carried out Monday-Thursday. We can offer a weekend service where possible, for an additional cost.

- Sedate or anaesthetise the dog and place it in lateral recumbancy.
- Clip a 10cm² area from where the specimen will be taken (just behind the scapula). You should be able to palpate the subcutaneous fat.
- Block the area for harvesting with local anaesthetic.
- Aseptically prepare the area.
- Under sterile conditions make a small incision (figure 1).
- Lift the skin to expose the adipose tissue beneath and extract approximately two tablespoons (figure two). A second incision can be made to ensure sufficient tissue is obtained.
- The harvested tissue is placed into the sterile conical tubes for processing (figure 3).
- The incision sites are closed and dressed.
- Two vials of 8ml of blood are also collected in the serum tubes (figure 4).

Warning

This process involves the preparation of a substance intended for administration to a patient. Sterility and aseptic technique is paramount. Nupsala cannot be held responsible for operator error.

Equipment required

1 x Transport box (available from Biobest, Tel: +44 (0)131 440 2628)
Transport box includes:
- 1 x styrofoam insulated box validated to keep the sample at +2-8°C for 48 hours
- 2 x gel cooling packs (one to be pre-frozen for at least 24hrs before aspiration, one to be chilled at +4°C)
- 1 x insulating foam insert to protect and stabilise tubes during transport

1 x Harvesting kit (available from Biobest, Tel: +44 (0)131 440 2628)
Harvesting kit includes:
- 2 x 50ml plastic sterile universal containers (white)
- 2 x 8ml Serum Tubes
- 1 x resealable plastic bag (to surround foam insert)
- Sample submission form (also available at www.biobest.co.uk)

You will also need:
- Local anaesthetic (eg. mepivicaine)
- Stitch kit
- Sedative
- Clippers
- Harvesting instructions
Packaging & Transportation

Label all tubes with the date and dog’s details and complete the sample submission form (figure 5).

- Put the pre-frozen cool pack in the bottom of the transport box and place second (chilled at 4°C, not frozen) cool pack above it to stop the samples coming into contact with the frozen pack. It is very important the adipose tissue does not freeze as this will kill any cells in the sample. Do not allow the sample to contact a frozen pack directly.

Ensure that the tubes are properly closed and correctly identified. Then place the samples into the holes in the foam insert provided (figure 6) and place the foam inside a large plastic bag with absorbent material (e.g. cotton wool). Place the bag containing the foam insert into the cooled transport box provided. If for any reason a foam insert is not available, the tubes containing the samples should be well insulated using another material (e.g. paper towels) and enclosed in the plastic bag with absorbent material in case the sample leaks in transit.

- Put the completed sample submission form into a plastic bag/’documents enclosed’ envelope and place in/stick on the transport box.
- If you are based in the UK, seal the transport box and send via Royal Mail (guaranteed next day delivery (by 1pm) with £1000 consequential loss cover) to Biobest at the address below.
- If you are based outside the UK, please book a courier to deliver within 24hrs to the Biobest address below.

Laboratory Address

Biobest Laboratories Ltd
6 Charles Darwin House
The Edinburgh Technopole
Milton Bridge
Near Penicuik
EH26 0PY
United Kingdom

Finally, inform Biobest of the expected arrival date via enquiry@biobest.co.uk or +44 (0)131 440 2628.

Arranging for Implantation

Biobest will liaise with the practice to arrange a suitable date for delivery of cells. Delivery is normally pre-9am where possible. If you would like further updates on the progress of the cells please telephone Biobest on +44 (0)131 440 2628.

With the Biobest/Nupsala Stem Cell Service living cells are returned in a fully validated packaging system at ambient temperature resuspended in the patient’s own serum. This avoids the need to use unlicensed cryoprotectants and cell culture reagents in a therapeutic product.