

Arizona State University
Institutional Animal Care and Use Committee
STANDARD INSTITUTIONAL GUIDELINE

BLOOD COLLECTION IN RODENTS USING THE LATERAL SAPHENOUS VEIN

Description of procedure:

Lateral saphenous blood draw allows for rapid sampling, which can be repeated from the same site without necessarily needing to make a new puncture wound. Maximum blood collection from a single bleed cannot exceed a volume equivalent to 1% of body mass (assuming 1 ml = 1g). Maximum blood collection for serial sampling over a one-month period cannot exceed a volume equivalent to 1.5% of body mass. That is, while up to 1% of body mass in blood can be taken in a single draw, 1.5% of total body mass can be collected in smaller individual samples over the course of a month. This greater percent volume is obtainable because of the regeneration of red blood cells over time. In experiments requiring serial blood sampling, the number of blood draws limits the maximum volume of each blood draw over the course of a month (i.e., 1.5% divided by the number of blood draws in a month). This approach allows for infrequent collection of relatively large samples or frequent collection of small samples. During the procedure, any blood loss (i.e., drops not collected) must be accounted for when calculating the total allowable blood volume.

1. Animal is restrained using an appropriate rodent restraint device or by hand.
2. One rear leg is manually extended and the fur is removed from the lateral lower leg using an electric clipper. The clipped area is wiped down with a gauze pad that is pre-moistened with alcohol.
3. Venous blood flow through the leg is occluded by lightly pinching the muscles of the upper leg distal to the hip. This will dilate the vein, making it easier to locate. The samples site is distal to the gastrocnemius muscle and proximal to the hock. If desired, triple antibiotic ointment or Puralube can be placed on the leg so that the blood beads up on the skin surface.
4. A small gauge (e.g., 20-27g) needle is inserted through the skin and into the vein, and then the needle is retracted from the leg.
5. A drop of blood then forms at the needle insertion site and can be collected with a hematocrit tube or a microcentrifuge tube. Blood flow may be facilitated by repeatedly releasing and re-pinching the leg as well as by massaging the leg above the needle insertion site.
6. When blood collection is complete, bleeding is stopped by applying pressure to the site with a gauze pad.
7. Serial blood collection can sometimes be accomplished by removing the formed scab with a piece of gauze and then massaging the leg. Sometimes, reinsertion of the needle at a more cranial site may be necessary for collection of additional blood samples.

Reference:

Hem, A., Smith, A. J., and Solberg, P. 1998. Saphenous vein puncture for blood sampling of the mouse, rat, hamster, gerbil, guinea pig, ferret, and mink. *Laboratory Animals* 32: 364-368.

Updated 3/28/2024

Updated 2/25/2021

Updated 1/25/2018