Bleeding Technique Selection - Rats

Procedure	Advantages	Disadvantages
Saphenous Vein	No anesthesia Serial bleeding okay Moderate volumes Minimally invasive Complications rare	Moderate volumes require technical skill Requires shaving Restraint may raise stress hormones/blood glucose May cause temporary limping Not aseptic
Pedal Vein	No anesthesia Serial bleeding okay Easy technique Quick, no shaving Minimally invasive Complication rare	Small volumes of blood only Restraint may raise stress hormones/blood glucose May cause temporary limping Not aseptic
Tail Bleeding	No anesthesia Serial bleeding okay Small to moderate volumes Complications infrequent	Discomfort common Requires some technical skill—especially with small rats Heating may increase dehydration risk Restraint may raise stress hormones/blood glucose Aseptic technique more difficult
Tail Nicking	No anesthesia Serial bleeding okay Easy repeat sampling (scab removal) Easy technique Complications rare if using needle	Discomfort common Complications more common if using scalpel Only small volumes Heating may increase dehydration risk Artery can take time to clot Restraint may raise stress hormones/blood glucose Sample quality variable (often contains tissue) Not aseptic
Tail Snipping	Easy technique Easy repeat sampling (scab removal)	Requires IACUC justification Anesthesia/anesthetic required (>21 days) Discomfort common Damage common (especially for repeat sampling) Leukocytosis common (especially with tail milking) Heating may increase dehydration risk Sample quality variable (often contains tissue) Mixture of venous and arterial blood Not aseptic
Jugular	High quality aseptic sample Large volumes	Anesthesia usually necessary Requires skilled technician Poor technique can cause nerve damage, hemorrhage or death Not applicable to serial sampling
Cardiac Puncture	High quality aseptic sample Large volumes Cut down for arterial or venous blood	Terminal procedure ONLY Deep anesthesia required Poor technique may limit volume Some technical skill required