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Minimally Invasive Method for Collection of Blood from Guinea Pigs

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Red blood cells of guinea pigs are indispensable to virological examinations, such as the hemagglutination inhibition test for influenza viruses, the hemadsorption test for human parainfluenza or mumps viruses, etc. As they have no tails, the ears are too small, and the veins in the legs are difficult to find, cardiac puncture is usually performed for the collection of blood from guinea pigs. Cardiac puncture, however, often results in cardiac tamponade (1). Recently, we found that Snitily et al.'s technique of blood collection from the rat foot (2) could be applicable to conventional guinea pigs.

In this study, we used male guinea pigs older than 6 months. They were housed in cages and freely provided commercial solid feed, vegetables, and water. Operating procedures consist of the following four steps.

- (i) Induction of anesthesia: A guinea pig is placed in a desiccator in which a Petri dish containing ethyl ether is placed and the condition of the animal is observed. The animal is removed from the desiccator at an early stage of anesthetization, and is never anesthetized for too long a period.
- (ii) Disinfection and stimulation of foot blood flow: A foot is disinfected using an alcohol-soaked cotton and rubbed vigorously by a gauze moistened with methyl salicylate. Use of xylene is discouraged because it harms the skin.
- (iii) Collection of blood: A vein between the digits of the foot is punctured using a 20-gauge needle. Oozing blood is collected using a hematocrit capillary tube (Fig. 1). The capillary tube is changed quickly to collect more blood if oozing continues.

Steps (ii) and (iii) should be performed with the animal under shallow anesthesia using a 50-ml-disposable centrifuge tube plugged with an ether-soaked cotton (Fig. 2).

- (iv) Transfer of blood into a solution of sodium citrate: The capillary tube containing the blood is connected to an appropriately shortened disposable dropper with a spoid cap. The capillary tube is inserted into a centrifuge tube containing 3.13% sodium citrate solution until the blood in the capillary tube directly contacts the sodium citrate solution. The blood is expelled by compressing the spoid cap (Fig. 3).

- (v) After the operation, the punctured site is pressed with clean paper in order to stop the bleeding.

We observed no fatalities caused by the repeated collections of blood over a period of one year or more. This technique



Fig. 1. Blood is collected by capillary action into a hematocrit capillary tube. Capillary tubes before use are placed in a disposable Petri dish. A needle for puncture is shown in the upper part of the photograph.

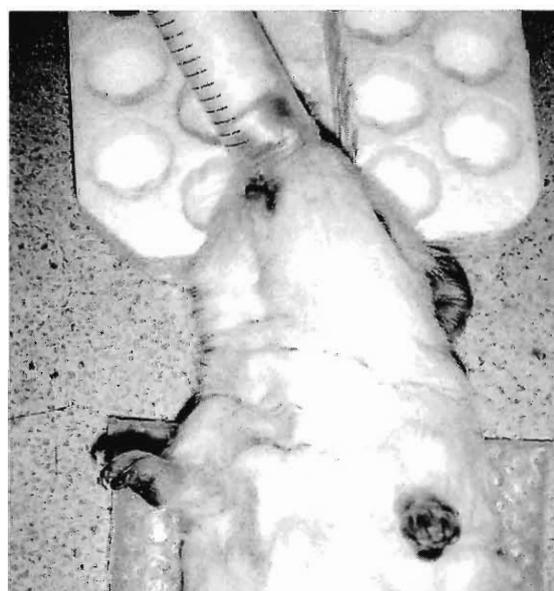


Fig. 2. Anesthesia is maintained by placing a 50-ml-disposable centrifuge tube plugged with an ether-soaked cotton over the nose.

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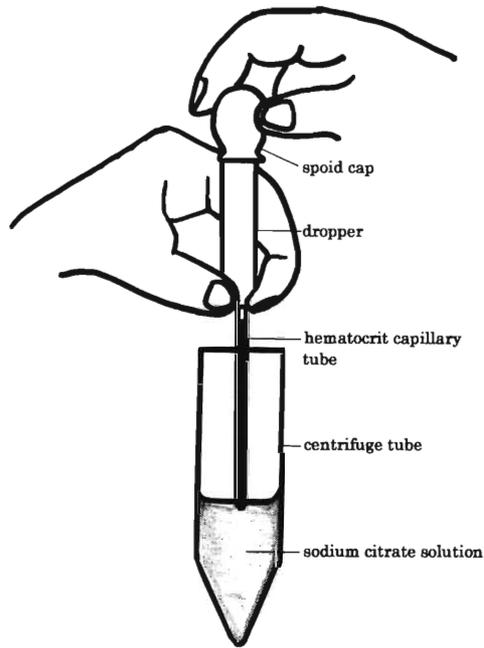


Fig. 3. A dropper and a hematocrit capillary tube are held by the thumb and the index finger of one hand while the spoid cap is compressed by the fingers of the other hand. The loss of blood is prevented by direct contact of a capillary tube with the sodium citrate solution.

allows the collection of 0.4 ml of whole blood from a guinea pig foot at one time. Ideally, a team consisting of three persons, one for blood collection, one for a maintenance of anesthesia, and one for the transfer of blood from hematocrit capillary tubes into a solution of sodium citrate, is necessary for a smooth operation.

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