

Centrifugation

General Guidelines

- a. The recommended centrifuge time is 15 minutes at approximately 3000-3500 rpms in a fixed angle centrifuge or 10 minutes at approximately 2700-3100 rpms in a swing bucket centrifuge.
- b. The centrifuge must be properly balanced. This is to prevent excessive vibration and potential breakage of the specimen tube. It is also necessary to properly separate the serum/plasma from the cells. Always balance the sample with a tube of the same type with the same amount of liquid. Place the balance tube in the slot directly across from the sample.
- c. If a short tube needs to be spun, you will need to use forceps to remove the tube from the centrifuge.
- d. Blood specimens should be adequately clotted prior to centrifugation.
- e. Always centrifuge specimens with stoppers or lids on the tube.
- f. Never re-spin a gel barrier tube if the gel has not completely separated. Take the sample off to an aliquot tube, spin that aliquot tube, and re-pour into another aliquot tube leaving any cells in the bottom.

1. Procedure

- a. Collect the specimen in the appropriate tube, either for serum or plasma.
- b. If collecting a serum sample, allow specimen to clot a minimum of 30 min and maximum of 60 minutes. After 30 minutes, check sample to see if a solid clot has formed by gently inverting the tube. If the clot is solid and has retracted from the sides, it is ready to centrifuge.
- c. Place specimen tube into the centrifuge. The centrifuge must be balanced for proper operation of the centrifuge. Place a balance tube directly across from the specimen tube. The balance tube and the specimen tube must have an equal volume of liquid for proper operation.
- d. Turn the fixed centrifuge timer on to 15 minutes. Centrifuge at 3000-3500 rpms.
- e. Turn the swing bucket centrifuge on to 10 minutes. Centrifuge at 2700-3100 rpms.
- e. When the centrifuge comes to a complete stop, open the lid and carefully remove the specimen.
- f. Check to see that the cells and serum have completely separated. If you are using a gel separator tube, make sure the gel completely separates the serum from the cells.
- g. If there is not complete separation, do not respin the tube. With a disposable pipette, remove the serum from the original specimen tube and place into an aliquot tube. Cap the aliquot tube.
- h. Centrifuge the aliquot tube. Once the centrifuge comes to a complete stop remove the aliquot tube. Pour off the serum into another properly labeled aliquot tube, leaving the cell button behind.

2. Safety

- a. With normal operation, the centrifuge does not present any safety hazards. It is important to follow the listed safety precautions while operating the centrifuge.
- b. LID: never open the lid while the rotor is moving. If the centrifuge comes with a safety interlock switch, do not tamper with this safety mechanism. If the switch is broken, do not operate the centrifuge until the switch is repaired.
- c. LOAD BALANCE: the centrifuge must be balanced before operating. When centrifuging single or multiple tubes, each tube has to be counterbalanced with a tube of blood or a tube filled with water of equal volume. Never spin a single tube without using a balance tube. Excessive noise or vibration is an indication that the centrifuge is not balanced.
- d. BIOHAZARD: If a tube spills or breaks, there is potential biological hazard, the centrifuge must be cleaned and disinfected using an approved cleanser and appropriate PPE.

3. Maintenance

- a. Centrifuges must be checked annually for accuracy. A tachometer is used to verify the centrifuge RPMs.
- b. The timer on the centrifuge should also be checked for accuracy.
- c. Biomed should perform an annual check of your centrifuge.
- d. If you feel you are having problems with your centrifuge or it needs to be checked, please contact Biomed or the CHI Health Laboratory for assistance.