Microarray Core

Tissue Sample Collection
and Transport in RNALater

Principal

RNAlater is an aqueous, non-toxic tissue storage reagent that rapidly permeates tissue to stabilize and protect cellular RNA in unfrozen specimens. Tissue pieces are harvested and immediately submerged in RNAlater for storage without jeopardizing the quality or quantity of RNA. RNAlater eliminates the need to immediately process tissue specimens or to freeze samples in liquid nitrogen for later processing that it becomes extremely convenient to use within the clinical arena.¹ This procedure describes the sample collection, storage and transport of tissue collected for RNA testing.

Materials

A. RNALater
B. 2ml CryoVials or 2ml sample tube
C. Punch biopsy tool
D. Disposable gloves

Safety implications

Adhere to proper use of PPE. General precautions for biohazardous materials are to be observed. All disposable supplies should be disposed per the institution’s waste protocol.

Procedure

1. Add 1.5 ml of RNAlater to a properly labeled 2ml sample tube.
2. Using the appropriate size punch biopsy tool, collect tissue from the non-dominant arm or upper buttock area.
3. Place the fresh biopsied tissue into the 2ml tube with RNAlater
4. Shake tube vigorously by hand to ensure that the tissue is coated with RNAlater solution.*
   *Make certain tissue is in solution and not caught in the lid of the tube.
5. Let specimen ‘soak’ in RNAlater for 4-8hrs at 4°C, allowing the solution time to permeate the tissue.
6. Store samples long-term at -80°C.
7. Make certain that the tube is in the upright position throughout the process, including freezing, so that the tissue remains submerged in RNAlater.
8. It is preferable to ship the samples on dry ice as soon as possible after collection.

Limitations of procedure

- Only fresh, unfrozen samples can be stabilized using RNAlater. Previously frozen samples thaw too slowly in the reagent, thus preventing it from diffusing into the tissue quickly enough before the RNA begins to degrade.
- Tissue size is critical for successful RNA stabilization. Degradation will occur in tissue that is too large.
- The correct volume of RNAlater is essential for reliable stabilization.

References