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DNA and RNA stabilization

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We use this protocol and it's working

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Abstract

DNA and RNA stabilization solution is an aqueous and non-toxic tissue storage reagent that rapidly permeates tissues to stabilize and protect nucleic acids in fresh specimens. Tissue pieces are harvested and immediately submerged in stabilization solution for storage. It can be used for DNA and RNA preservation with most tissues, cultured cells and is compatible with most DNA/RNA isolation methods. Proteins are precipitated, but can still be used for analyzes that do not require their native structure, such as western blotting or gel electrophoresis. Samples in DNA and RNA stabilization solution can be stored indefinitely in RNAlater Solution at –20 °C or below.

Guidelines

Use only RNase-free tubes, tips and flasks.

Materials

MATERIALS

- Ammonium Sulfate **P212121**
- Sulfuric acid **Merck MilliporeSigma (Sigma-Aldrich) Catalog #**258105
- Sodium Citrate **Merck MilliporeSigma (Sigma-Aldrich) Catalog #**71402
- EDTA **Thermo Fisher Catalog #**17892

Use only RNase-free tubes, tips and flasks.

Troubleshooting

Safety warnings

Wear personal protective equipment: gloves, clothing and mask.

Before start

Organize your workspace.

Make sure all solutions and equipment are available. Plan the experiment!

Stabilization solution preparation (1.5 L)

1

- 935 mL of autoclaved MilliQ water
- 700 g ammonium sulfate
- Stir until dissolved
- Add 25 mL of 1 M sodium citrate
- Add 40 mL of 0.5 M EDTA
- Adjust to pH 5.2 using concentrated H_2SO_4
- Complete the volume to 1.5 L with autoclaved MilliQ water

Note

1. **Store at room temperature.**
2. **If any precipitation of stabilization solution is seen: heat to 37 °C and agitate to redissolve it.**

Procedure

2

- Do not freeze tissues before immersion in DNA and RNA stabilization solution.
- Use stabilization solution with fresh tissue only.

3

Add the stabilization solution in an appropriate 1.5 mL microtube.

Note

Use the minimum volume ratio 1:5 (tissue : solution).

4 Cut large tissue samples to approx. 3 mm in any single dimension and transfer to microtube containing the solution.

5 Store at 4 °C overnight to allow the solution to thoroughly penetrate the tissue.

6 **Do not freeze samples in stabilization solution immediately.**

Important notes

7 The DNase and RNase inactivation is reversible. So, do not rinse stabilization solution from samples before DNA and/or RNA extraction.

8 Tissue homogenization should be rapid once the tissue is in lysis/denaturation solution to nucleic acids extraction.

9 Remove the stabilization solution from the cells prior to extraction for isolating DNA and RNA from cells.

With the aid of a pipette, remove excess ofstabilization solution from the tube and then use an absorbent lab wipe or paper towel to help remove as much of the stabilization solution as possible.