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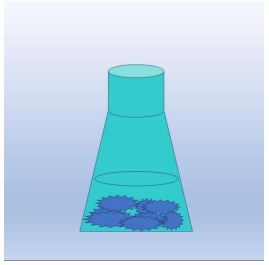
Simple and easy method for long-term storage of human tissue for molecular analysis at room temperature



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Sudhir Bhatia[1], Gudrun Baersch[1]

[1]Genekam Biotechnology AG

Sudhir Bhatia
Genekam Biotechnology AG

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Protocol status: Working
We use this protocol and it's working

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Disclaimer

Genekam Biotechnology AG
Duissernstr. 65a
47058 Duisburg
Germany

Abstract

The storage of human tissue at room temperature is one of challenging areas. In the literature, there is hardly any reliable method available to achieve this. We have developed a solution called Genekam Tissue Storage Solution (GTSS), which make it possible to do this task. In our laboratory, we have human tissues stored for last 5 year and GTSS is being used to isolate nucleic acid (RNA / DNA) with mini column method as well as magnetic beads isolation method. Isolated nucleic acid has been used in conventional and real time PCR along with conducting hybridization assays. This method offers the possibility for histological as well as pathological samples to be stored at room temperature. The user can transfer the samples between the laboratories at room temperature, which saves shipping costs. Our experiments show that there is no loss of nucleic acid during storage and isolated material can be used to conduct large number of molecular tests on the same sample. Read the publication also.

This solution is very economical in the terms of costs.

Guidelines

Human tissue collection for this protocol needs prior approval by the users' institutional review board (IRB) or equivalent ethics committee(s).

Materials

-SB0245 - Genekam Tissue Storage Solution
-Freshly collected tissue
-Pipettor and Pipette tips
-Plastic tubes (15 and 50 ml)
-Tube Rack
-Sterile scissors
-Sterile forceps

Optional:
-SB0001 - Genekam Universal DNA-Isolation Kit (INT) for human samples;
-UDI-DI: 04262420430706 - CE
-SB0079 - Genekam Universal RNA-Isolation Kit (INT) for human samples;
-UDI-DI: 04262420430799 - CE
-SB0179 - Genekam Universal DNA/RNA-Isolation Kit (INT) for human samples;
-UDI-DI: 04262420430829 - CE

-FR118 - Human specific DNA internal control (Realtime PCR-Kit)
UDI-DI: 04262420430225 - CE
-FR799 - Ready to use Realtime PCR-Kit for Identification of ß-Actin (Internal control)
UDI-DI: 04262420430010 - CE

Safety warnings

-The tissue must be completely immersed in the solution as this is very important. If the solution used, add the GTSS so that the tissue is fully dipped.

-Human tissue collection for this protocol needs prior approval by the users' institutional review board (IRB) or equivalent ethics committee(s).

Before start

Read the manual and instructions carefully.
Calculate the volume needed for storage of your tissue.
Prepare the tissue to be stored.

1 Calculate the required volume of Genekam Tissue Storage Solution (GTSS) for the sample. 15ml GTSS per 5g tissue. It is also possible to store smaller tissue, e.g. 1g or less.

2 Put on the gloves as for molecular analysis.

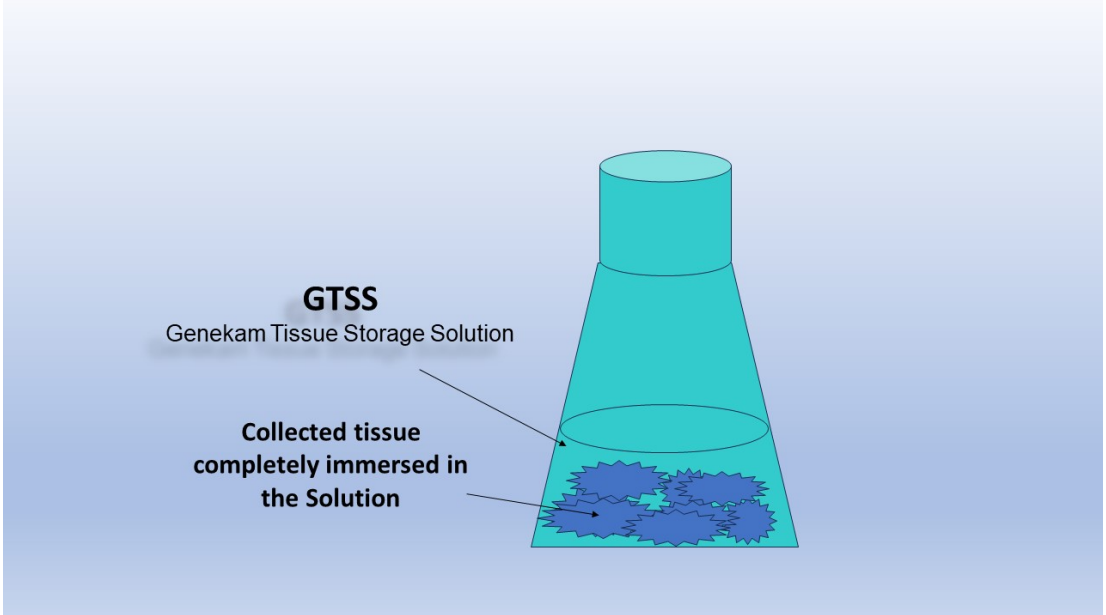
3 Label the storage tube so that it cannot fade during storage.

4 Take sterile scissors and prepare the tissue. It is best to cut the tissue into small pieces, as this can lead to better output in the long term.

Hint: If user is working under field condition to collect the samples, the whole tissue piece can be added directly to GTSS instead of making the pieces. Care must be taken that the tissue is immersed in the fluid!

5 Place the tissue pieces in a sterile tube (15ml or 50ml) using sterile forceps.

6 Now add the calculated volumen of GTSS to the tissue pieces so that **it is completely flushed through the solution (see figure below).** It is very important that the tissue is completely covered with liquid. Otherwise, unpleasant odors may occur.



7 Now close the tubes and store them in the dark at room temperature. Don´t store in open. **Avoid direct sunlight.**

8 After 2 days, you should perform a DNA/RNA isolation to determine whether the storage works. 100µl of liquid from the stored tissue is sufficient for the isolation.

9 After isolation, the isolated DNA / RNA can be measured with a spectrometer. In our isolation, we obtained up to 225ng / µl DNA or RNA per sample from such tissues. The types of isolation kits are listed as optional under Material.

10 To confirm the isolation, PCR can be performed for internal controls (house keeping genes). The PCR kits used are listed as optional under Material.

11 An important note: In our research we have found that the concentration of isolated DNA / RNA can be different in different tissues, e.g. our research shows that placental tissue contains less DNA / RNA than umbilical cord tissue.

Protocol references

1. Bhatia S. A simple long term storage solution for human tissues as continuous source of DNA/RNA for PCR analysis. Atlantic J Med Sci Res. 2024;4(1):6-8.Doi:10.5455/atjmed.2023.07.045

2. Bhatia S. LOSSOF AN ABUNDANT QUANTITY OF RIBONUCLEIC ACID DURING MINI COLUMN ISOLATION METHOD. BIOTECHNOLOGIA ACT. 2023; 16 (3). DOI:https://doi.org/10.15407/biotech16.01.067