

DNA EXTRACTION FROM ANIMAL TISSUE USING THE PRECELLYS TISSUE DNA EXTRACTION KIT

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CONTEXT

DNA extraction from animal tissues and cultured cells is one of the most common techniques used in molecular biology laboratories. It is a critical step for biomolecular and genomic applications.

High quality and high yield DNA can be obtained from any type of tissue sample thanks to an optimal extraction process that relies on 2 steps: tissue homogenization and DNA purification. Finding the appropriate protocols for each one of these steps, and combining them to obtain the best out of any tissue sample is a mandatory milestone for most laboratories.

With its wide range of tissue homogenizers, Bertin Instruments addresses the first challenge of tissue disruption by using a powerful 3D bead-beating technology under the Precellys® brand. Bertin Bioreagent has thus developed a DNA extraction kit to complete the sample prep workflow resulting in the Precellys Tissue DNA Extraction Kit, a solution for all of your genomic applications.

In this Application Note, we present the results obtained using the Precellys Tissue DNA Extraction Kit for the extraction and purification of DNA from mouse liver and heart tissues, and how they compare to some of our competitors.

MATERIALS

- **Precellys Tissue DNA Extraction Kit** (Cat No. D05701)
- **Precellys 24 Touch** (Cat No. P002391-P24T0-A.0)
- **Precellys Lysing Kit CK14** (Cat No. P000912-LYSK0-A)
- **Precellys Lysing Kit CK28-R** (Cat No. P000916-LYSK0-A)
- 9 mouse heart and liver samples (25 mg/ sample)
- DNA extraction kit Competitor Q
- DNA extraction kit Competitor M
- Ethanol (100 %)
- Isopropanol (100 %)





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PROTOCOL

Tissue Homogenization & Lysis

- 1) Add sample to the lysing kit tube (Lysing kit CK14 for liver samples; Lysing kit CK28-R for heart samples)
- 2) Add 200 µl Tissue Lysis Buffer and 25 µl Proteinase K. Vortex
- 3) Homogenize samples (Precellys 24 Touch - Liver samples: 6000 rpm for 1 x 10 sec; Heart samples: 6500 rpm for 3 x 10 sec)
- 4) Incubate at 55 °C in heat block for 1 hour
- 5) Centrifuge ($\geq 10,000 \times g$) for 5 minutes
- 6) Transfer the supernatant to a sterile 1,5 ml microcentrifuge tube

Bind -> Wash -> Elution, following the instructions from the Precellys Tissue DNA Extraction Kit user guide

DNA Quantification and Quality Control

- Quantification and quality analysis of DNA by NanoDrop
- qPCR on housekeeping genes (GAPDH for liver and B2M for heart samples).

RESULTS

Mean DNA concentrations were 2693.27 ± 157 ng of DNA/mg of tissue and $2924.16 \pm 219,36$ ng of DNA/mg of tissue for mouse heart and liver samples, respectively. DNA yield was significantly higher with the Precellys Tissue DNA Extraction Kit, compared to the competitors.

Table 1.- DNA concentrations (ng of DNA/mg of tissue) of mouse heart and liver samples obtained with the Precellys Tissue DNA Extraction Kit (Bertin Bioreagent).

Sample	DNA (ng/mg)	260/280	260/230
Liver 1	2827,60	2,03	2,02
Liver 2	2717,12	2,06	2,11
Liver 3	3227,76	2,02	2,04
Heart 1	2722,00	2	2,16
Heart 2	2870,00	1,99	1,91
Heart 3	2487,80	2,02	2,12

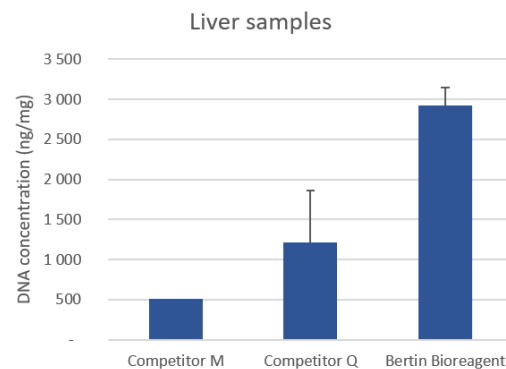
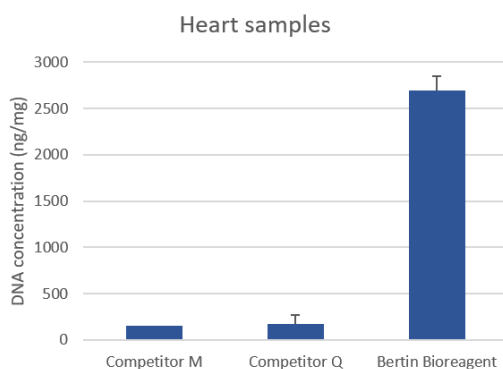


Figure 1.- DNA concentrations (ng of DNA/mg of tissue) of mouse heart and liver samples obtained with the Precellys Tissue DNA Extraction Kit (Bertin Bioreagent), competitor M and Competitor Q.



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Mean ΔCq value obtained for liver samples was 3.32 with a SD = 0.02 (Figure 2A), between 10-fold dilutions. The mean ΔCq value obtained for heart samples was 3.30, with a SD = 0.4, between 10-fold dilutions (Figure 2B).

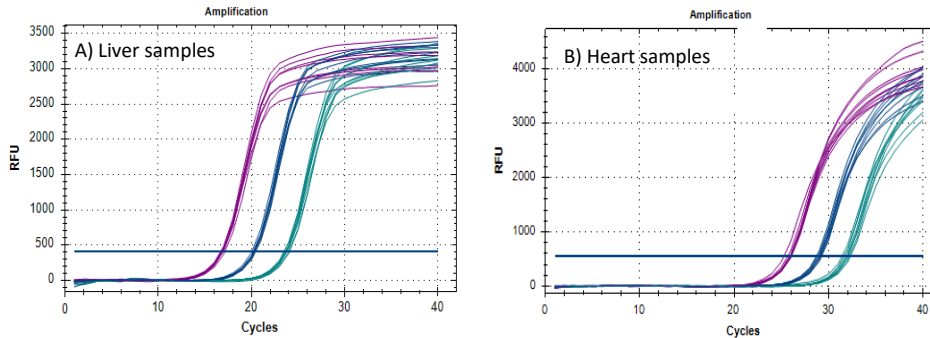
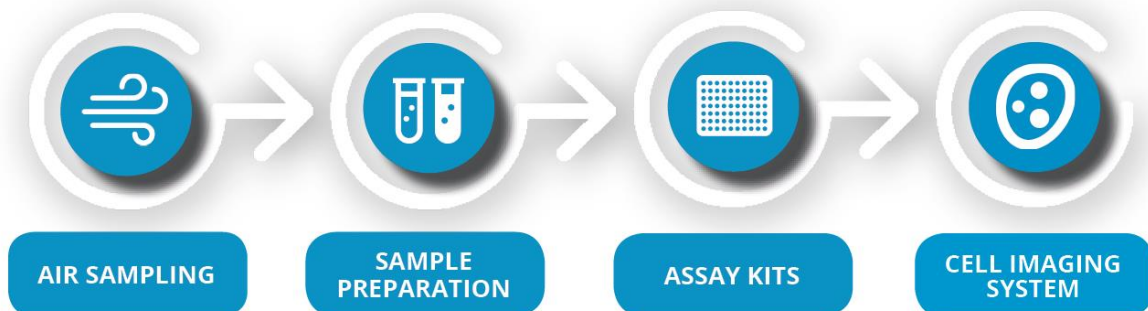


Figure 2.- qPCR results obtained for housekeeping genes (GAPDH for liver and B2M for heart samples) after DNA extraction using the Precellys Tissue DNA Extraction Kit (Bertin Bioreagent).

CONCLUSION

The Precellys Tissue DNA Extraction Kit from Bertin Bioreagent allows to extract high quality DNA with a very high yield from diverse animal tissues. In conjunction with the power of the 3D bead-beating technology of the Precellys homogenizers, a complete solution is now available for the sample preparation workflow in biomolecular laboratories.

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