APPLICATION NOTE

Automated DNA purification from soft tissue biopsies and mouse tails using MagAttract® technology and the BioRobot® M48 workstation

DNA purification from a range of tissue types is commonly used in basic and applied research labs as well as in clinical research settings. This study illustrates the high-quality and the consistent performance of DNA purified from bovine tissue and mouse tails using MagAttract® magnetic particle technology in combination with the BioRobot® M48 workstation.

Introduction

Fully automated MagAttract purification technology allows a range of sample types to be processed. Downstream applications yield more accurate data and workflow is streamlined when reproducible yields of high-quality DNA are used.

Materials and methods

Various amounts of bovine soft-tissue biopsies (Table 1) and mouse tail biopsies approximately 2 mm in length (12–22 mg) were processed. Before automated purification, bovine soft-tissue biopsies were digested for three hours at 56°C and mouse-tail clips were digested overnight at 56°C. All digestions used 10 µl of QIAGEN® Proteinase K and 190 µl of QIAGEN Buffer G2 per sample. DNA was purified from all sample types using the MagAttract DNA Mini M48 Kit (192) in combination with the BioRobot M48 workstation. The Tissue Standard Protocol was used and purified DNA was eluted in 200 µl water. DNA yield (A_{260}) and purity (A_{260}/A_{280}) were quantified by absorbance corrected for background. Purified DNA (1 µl) was used in 50 µl PCR of the single-copy bovine obesity gene or GAPDH.

Results

Optimal amounts of tissue were used per DNA isolation. Sample quantities and yield and purity of purified DNA are shown (Table 1). Average DNA yields for bovine soft tissues and mouse tails were 9–28 µg. DNA purity was consistently high. Purified genomic DNA was of consistent high quality (Figure 1) and performed well in sensitive PCR analysis (Figure 2).

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Table 1. Average DNA yields and purities of six parallel samples per tissue type

Tissue	Amount	Purity*	DNA yield (µg)
Bovine			
Muscle	40 mg	1.87 ±0.01	9.0 ±0.1
Heart	20 mg	1.87 ±0.00	12.2 ±0.6
Spleen	10 mg	1.88 ±0.01	27.9 ±1.1
Lung	10 mg	1.87 ±0.01	17.0 ±1.0
Kidney	10 mg	1.88 ±0.00	18.4 ±0.45
Mouse			
Tail clips	2 mm	1.88 ±0.01	18.4 ±1.4

** Corrected for background at 320 nm.*

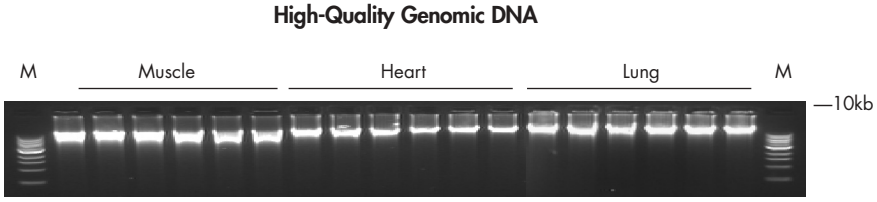

Figure 1. *MagAttract purified bovine genomic DNA from muscle, heart, and lung tissues. A 10 µl aliquot (5%) of the elution volume is visualized using a 0.8% agarose gel.* ***M****: 1 kb marker.*

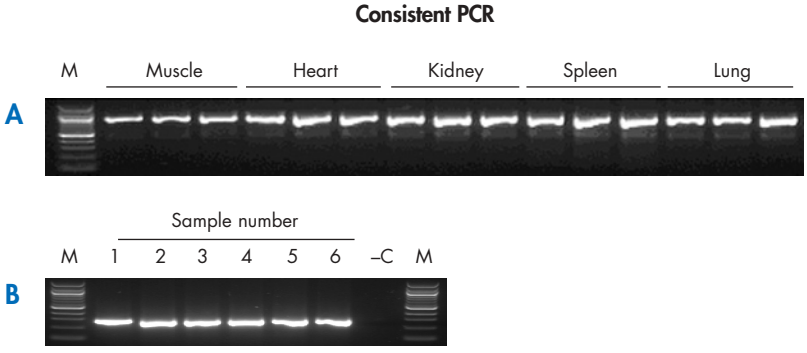

Figure 2. ***A****: PCR of the bovine obesity single-copy gene (850 bp fragment) from DNA isolated from tissues indicated in the figure. M: 100 bp ladder (100 ng). A 10 µl aliquot (5%) of each PCR was visualized by agarose gel electrophoresis.* ***B****: PCR of GAPDH using MagAttract purified DNA from six mouse tails.* ***M****:100 bp marker;* ***–C****: negative control.*

Conclusions

Using MagAttract magnetic particle purification technology with the BioRobot M48 workstation ensures:

- Consistent yields of high-quality DNA that performs consistently well in sensitive downstream applications such as PCR
- Genomic DNA is reliably purified from multiple types of tissue sample using a single purification kit and a single robotic workstation

Contact QIAGEN today and discover how reliable DNA preps from different tissues will benefit your lab!

Ordering Information

Product	Contents	Cat. No.
BioRobot M48 workstation	Robotic workstation for automation of magnetic-particle purification technology	9000708
MagAttract DNA Mini M48 Kit (192)*	MagAttract Suspension and reagents for purification of genomic DNA from up to 200 µl tissue lysates and other samples using the BioRobot M48 workstation	953336

The BioRobot M48 is intended as microtiter diluting and dispensing device. No claim or representation is intended for its use in identifying any specific organism or for a specific clinical use (diagnostic, prognostic, therapeutic, or blood banking). It is the user's responsibility to validate the performance of the BioRobot M48 for any particular use, since its performance characteristics have not been validated for any specific organism. The BioRobot M48 may be used in clinical diagnostic laboratory systems after the laboratory has validated their complete system as required by CLIA '88 regulations in the U.S. or equivalents in other countries.

** MagAttract Kits are intended as general-purpose devices that may be used in clinical diagnostic laboratory systems after the laboratory has validated their complete system as required by CLIA '88 regulations in the U.S. or equivalents in other countries.*

APPLICATION NOTE

BioRobot Systems are not available in all countries

The PCR process is covered by U.S. Patents 4,683,195 and 4,683,202 and foreign equivalents owned by Hoffmann-La Roche AG.

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