Promega

Product Application

Purification of High Molecular Weight DNA from Bovine Tissue

Purify high molecular weight DNA from bovine tissue samples with Wizard® HMW DNA Extraction Kit.

Kit: Wizard® HMW DNA Extraction Kit (Cat.# A2920)

Analyses: Absorbance, Fluorescent DNA binding dye, Pulsed-Field Gel Electrophoresis

Sample Types: Frozen tissue, ear punches stored in TSU tubes

Input: 20-60mg frozen tissue or 1 ear punch

Materials Required:

- Wizard® HMW DNA Extraction Kit (Cat.# A2920)
- Liquid nitrogen
- Device to grind tissue by hand (e.g. mortar and pestle or hammer)
- 1.5ml microcentrifuge tubes
- Wide-bore pipette tips (1,000µl and 200µl)
- Phosphate-buffered saline (1X PBS)
- Thermomixer, set to 65°C
- Heat blocks or water baths, set to 37°C and 56°C
- Isopropanol (room temperature)
- 70% ethanol (room temperature)

This protocol was developed by Promega Applications Scientists and is intended for research use only.

Users are responsible for determining suitability of the protocol for their application.

For further information, see Technical Manual TM604, available at: **www.promega.com/protocols**

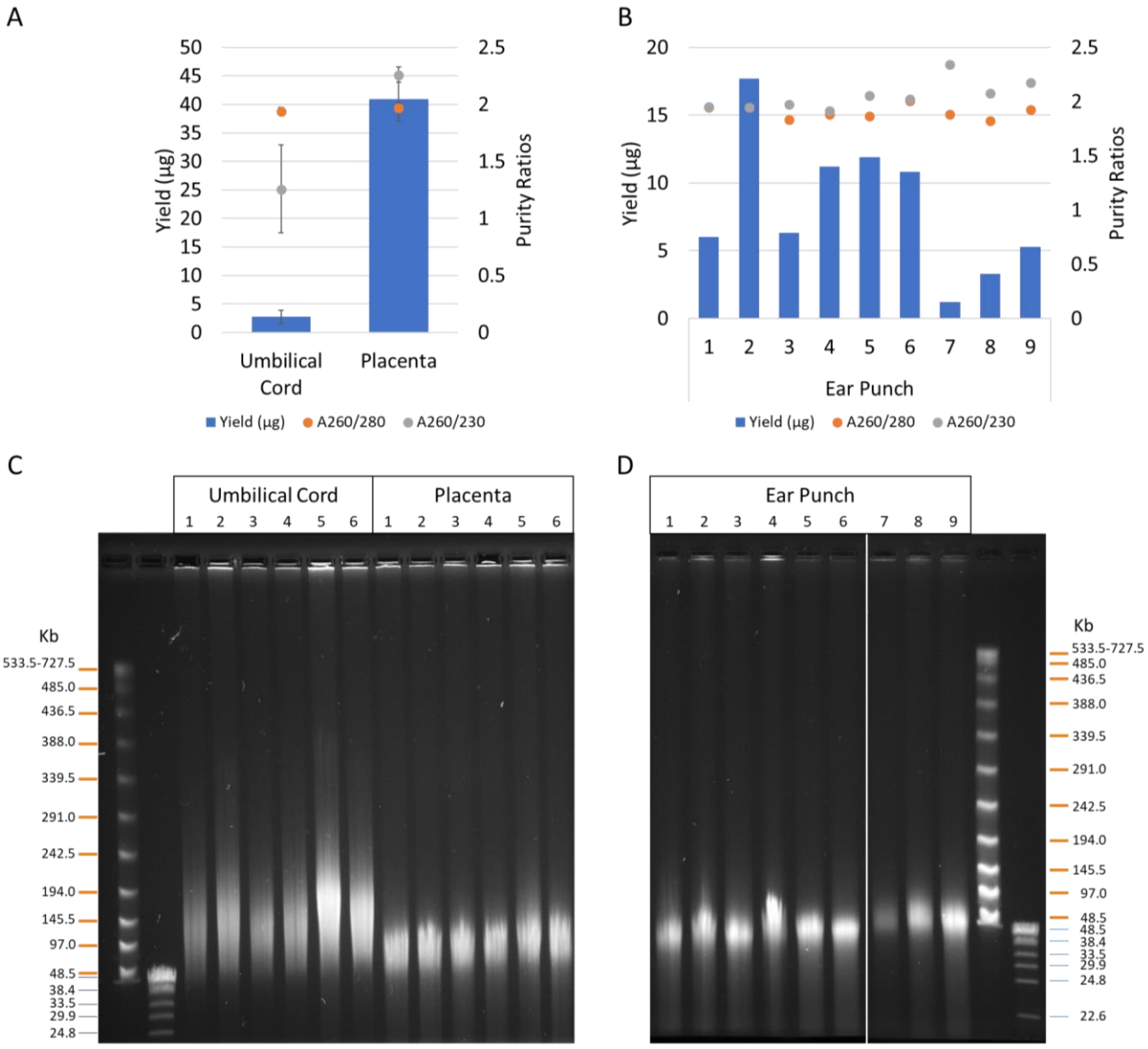
or contact Technical Services at: **techserv@promega.com**

Protocol:

1. Using a chilled mortar and pestle, grind the tissue to a fine powder in the presence of liquid nitrogen. Allow the liquid nitrogen to dissipate.
2. Transfer approximately 20-60mg of the ground tissue into a 1.5ml tube.
    - To prevent sample loss from a small piece of tissue (e.g. ear punch from TSU tube), instead of steps 1 and 2, the tissue may be frozen in liquid nitrogen in a plastic zipper bag, ground using a hammer, and transferred to a 1.5ml tube.
3. Suspend the ground tissue in 700µl of cold 1X PBS and vortex briefly to wet.
4. Centrifuge at 16,000 x g for 20 seconds to pellet the tissue.
5. Remove the supernatant, leaving behind the cell pellet plus 10-50µl of residual liquid.
6. Add 600µl of HMW Lysis Buffer A. Using 1,000µl wide bore pipette tips, mix the solution 5 times to suspend the tissue by drawing the contents slowly from the bottom of the tube, and then expelling the lysate rapidly down the side of the tube.
7. Incubate the sample at 65°C for 30 minutes in a thermomixer at 900rpm.
8. Centrifuge the samples at 16,000 x g for 1 minute, and then transfer the clear lysate to a clean tube.
9. Add 3µl of RNase A Solution to the lysate and mix the sample by inverting 5-7 times.
10. Incubate the mixture at 37°C for 15 minutes.
11. Add 20µl of Proteinase K Solution to each lysate and mix the sample by inverting the tube 10 times.
12. Incubate the mixture at 56°C for 15 minutes.
13. Cool to room temperature for at least 5 minutes.

14. Add 200µl of Protein Precipitation Solution to the lysate. Using 1,000µl wide bore tips, mix the solution 5 times by drawing the contents from the bottom of the tube, and then expelling the lysate rapidly down the side of the tube.
15. Incubate on ice for 5 minutes.
16. Centrifuge at 16,000 x g for 10 minutes at room temperature.
17. Slowly transfer the supernatant to a 1.5ml tube containing 600µl of isopropanol by decanting.
    - It is not necessary to transfer all of the supernatant. It is preferable to leave some behind in order to avoid aspirating the precipitated protein.
18. Gently mix the solution by inverting 8 times. Incubate for 1 minute at room temperature and repeat the inversions.
    - DNA may appear as a white mass of threads.
19. Centrifuge at 16,000 x g for 2 minutes at room temperature.
20. Carefully pipet off the supernatant, being mindful that the pellet may be loose. Some supernatant may be left behind to preserve the pellet.
21. Add 600µl of room temperature 70% Ethanol. Gently invert the tube several times to wash the pellet and tube walls.
22. Centrifuge at 16,000 x g for 2 minutes at room temperature.
23. Carefully aspirate the supernatant. Standard pipette tips may be used. Care must be taken not to aspirate the DNA pellet.
24. Invert the tube on clean absorbent paper and air-dry the pellet for 10-15 minutes.
25. Add 100µl of DNA Rehydration Solution to the tube. Incubate at room temperature overnight to rehydrate the pellet.
26. Store the DNA at 4°C.

Results:



Analyses of high molecular weight DNA from bovine tissue samples. (A,B) Yield and purity ratios of DNA purified from frozen bovine umbilical cord or placenta (A) or bovine ear punches in TSU tubes (B). Concentration was measured with 1µl of DNA sample using QuantiFluor® ONE dsDNA System (Cat.# E4870) on a Quantus™ Fluorometer (Cat.# E6150). K562 Genomic DNA (Cat.# E4931) was used as a standard. Concentration was multiplied by 100µl to calculate yield in µg. Absorbance at 230, 260, and 280nm was measured on a NanoDrop™ 8000 Spectrophotometer (Thermo Fisher Scientific). Purity ratios were calculated by the NanoDrop™ software. Mean ± standard deviation is shown for frozen tissues in (A), n=6 purifications each. **(C,D)** Pulsed-field gel electrophoresis analysis of high molecular weight DNA from frozen bovine umbilical cord or placenta (C) or bovine ear punches in TSU tubes (D). 500ng of DNA from each sample was run on a 0.75% agarose/0.5X KBB Buffer gel for 16 hours using a Sage Sciences Pippin Pulse™ power source with the 5-430Kb setting. Two molecular weight size markers were run: Lambda PFG ladder (New England BioLabs, orange) and CHEF DNA Size Standard 8.3-48.5Kb, Lambda Ladder (Bio-Rad, blue).