Obtain PCR-Ready Genomic DNA from Buccal Cells, HeLa Cells, Hair Follicles, Tail Snips, Bacterial Cells, or Feathers Using the QuickExtract™ DNA Extraction Solution

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Introduction

The QuickExtract™ DNA Extraction Solution, currently available separately or as a component of the BuccalAmp™ DNA Extraction Kit, provides an extremely efficient method for extracting PCR-ready genomic DNA from diverse samples. Extractions can be performed using the standard single-tube QuickExtract protocol on easily obtainable human and animal tissue samples for genomic, transgenic, or viral DNA screening. Here we report results for DNA extraction from buccal cells, HeLa cells, hair follicles, mouse tail snips, bacteria, and feathers. Extracted DNA was amplified using the FailSafe™ PCR System.

Methods and Results

QuickExtract DNA Extraction Protocol: Each of the following samples was placed in 0.5 ml of QuickExtract Solution, vortex mixed, heated at 65° C for 30 minutes, vortex mixed and then heated at 98° C for 15 minutes (Figure 1):

- Human buccal (cheek) cells collected using a Catch-All™ Sample Collection Swab and rotated 5 times in the QuickExtract Solution to disperse the cells.
- 10^4 counted human cervical carcinoma tissue culture (HeLa) cells.
- A 0.5-1 cm region of a single plucked human hair with follicle.
- A 0.5-1.0 cm section of a mouse tail snip.
- One *E. coli* colony picked from a plate.
- A 0.5-1.0 cm quill-end section of a bird breast feather that was plucked and stored at 4° C.

Amplification: Amplification of the QuickExtract DNA samples was performed using the FailSafe PCR System using 5 µl or less of each 0.5 ml sample. Reaction primers, annealing temperatures, and the FailSafe PCR 2X PreMix used for each sample varied.

Results: DNA extractions from buccal cells, tissue culture cells, hair follicles, mouse tail tissue, bacterial cells, and quill-end cells of bird feathers using the QuickExtract DNA Extraction Solution produced successful PCR amplification results with the FailSafe PCR System (Figure 2).

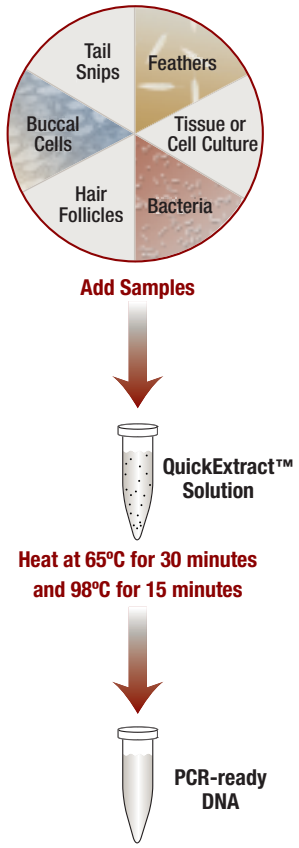

Figure 1. Procedure for obtaining PCR-ready DNA using the QuickExtract™ DNA Extraction Solution.

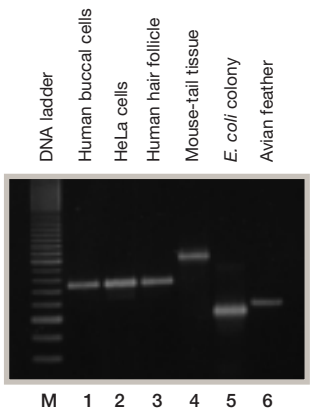

Figure 2. Genomic DNA extracted from a variety of tissues or cells using the QuickExtract™ DNA Extraction Solution were consistently amplified using the FailSafe™ PCR System. Lanes 1-3, human β-globin; Lane 4, mouse GAPDH; Lane 5, *E. coli* 16s ribosomal RNA gene; Lane 6, avian viral sequence.

Conclusion

Extraction of DNA using the QuickExtract DNA Extraction Solution is quick and efficient. DNA extraction, from a broad range of sample types, requires only heating. The DNA obtained is readily amplifiable by PCR, as shown here using the FailSafe PCR System.

The QuickExtract method allows for the inexpensive processing of one to hundreds of samples in less than an hour without centrifugation, spin columns, or use of toxic organic solvent. This simple process is amendable to automation but can also be easily performed manually, without expensive and troublesome robotic equipment. The QuickExtract Solution and the BuccalAmp DNA Extraction Kit also permit the use of samples obtained by non-invasive means, such as hair follicles and buccal cells rather than blood samples, thereby avoiding the health risks of needle sticks, blood storage requirements, and the expense of certified phlebotomists.

www.epicentre.com/buccalamp.asp

QuickExtract™ DNA Extraction Solution 1.0

QE09050 50 ml
Bulk solution, sufficient to perform 100 extractions.

BuccalAmp™ DNA Extraction Kits

BQ0901S 1 Kit
BQ0908S 8 Kits
BQ0916S 16 Kits

Contents:

15 tubes (1 extraction/tube) of BuccalAmp™ QuickExtract™ Solution 1.0

15 individually-packaged sterile Catch-All™ Swabs.

FailSafe™ PCR System

See the center insert for product and ordering information.