Ask Frank

by Fred and Hank


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Questions about QuickExtract™ DNA Extraction Solution

Q. Can I restriction digest, clone, or directly sequence the extracted DNA prepared with QuickExtract™ DNA Extraction Solution?

A. No. The extracted DNA amplifies efficiently by PCR, but the extraction procedure does not remove proteins and other cell debris and the DNA cannot be used for restriction digests, cloning, or direct sequencing. The resulting PCR product, amplified from a specific genomic DNA target, can be purified and restriction digested, cloned, or sequenced.

Q. What is the best way to quantify DNA extracted from samples using the QuickExtract Solution?

A. Because there is residual degraded RNA in the sample, using OD_{260} to quantify the DNA will give an artificially high estimate of the DNA concentration. The best method to quantify the DNA is by fluorimetry using a DNA-specific dye, such as Hoechst 33258[1] (bisbenzimide), or PicoGreen®. These dyes bind specifically to double-stranded DNA and not to nucleotides, single-stranded DNA, or RNA.

Q. Can I use the new 3-minute QuickExtract protocol[2] with any sample?

A. For individual cells, such as buccal, HeLa, or bacterial (gram-positive or gram-negative), we recommend the 3-minute protocol. We have found no difference in the resulting PCR amplifications between the 3-minute protocol and the standard 46-minute procedure. However, not all samples behave the same and may require different incubation times. For a more rapid protocol with samples such as animal tissue, mouse tails, hair follicles, or feather quills, we recommend an 8-minute protocol (please see article on page 18). If you are uncertain about which procedure to use, please contact us about extraction information for your specific sample type.

Q. What kinds of samples have been successfully extracted with QuickExtract DNA Extraction Solution?

A. So far, we and our customers have successfully extracted and amplified DNA from buccal cells (human, bovine, and murine), gram-positive and gram-negative bacteria, hair follicles, chicken feather quills, blood (liquid or dried on either Guthrie cards or filter paper), and organ and tissue samples, such as liver.

Q. Can the QuickExtract DNA Extraction Solution be used with samples in forensic analysis?

A. Yes, QuickExtract DNA Extraction Solution has been tested and used by the California Department of Justice to obtain DNA for different forensic analyses. Please contact us for more information.

Q. Can DNA prepared with QuickExtract Solution be used in whole genome amplification procedures, such as GenomiPhi™, REPLI-g™ or TempliPhi™ Multiple Displacement Amplifications (MDA)?

A. Yes. A recent paper[3] cites the use of DNA extracted using EPICENTRE's QuickExtract Solution with Amersham's TempliPhi kit and Molecular Staging's REPLI-g kit for Multiple Displacement Amplification of the DNA. The authors state that under certain conditions MDA enhances downstream PCR, genotyping, and fingerprinting results.

Q. What is the difference between the QuickExtract DNA Extraction Solution and EPICENTRE's MasterAmp™ DNA Extraction Solution?

A. The MasterAmp DNA Extraction Solution has a different formulation, which includes a proprietary bead matrix that was used to remove PCR inhibitors from the DNA extract. This matrix was later found to be unnecessary, especially in non-buccal cell sample types, and is not used in the QuickExtract Solution.

References

1. Hoffman, L. and Moan, E. (1998) *EPICENTRE Forum* **5**(4), 1.
2. Jarvis, B.W. (2004) *EPICENTRE Forum* **11**(4), 4.
3. Sorensen, K.J. *et al.* (2004) *Anal. Biochem.* **324,** 312.

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