

Abstract 67

INDICATING FTA ELUTE: FOR THE COLLECTION, PROCESSING, AND ELUTION OF DNA FROM BIOLOGICALLY CLEAR SAMPLES FOR USE IN DOWNSTREAM AMPLIFICATION TECHNOLOGIES.

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Collecting oral samples is a non-invasive procedure that can be carried out easily and safely by the layperson, thus providing an ideal format for collecting genetic samples from virtually anywhere in the world. However, locating the exact placement of the applied sample on FTA Elute is complicated by the fact that the oral sample is clear and the matrix is white. To clarify sample placement, Indicating FTA Elute has been developed for use with clear, oral samples. Indicating FTA Elute incorporates a color indicator, in addition to the patented FTA Elute chemistry, that clearly distinguishes the margins of the oral sample after it is applied to the matrix. It is functionally equivalent to FTA Elute in that it protects DNA samples from degradation and provides a source of amplifiable DNA that can be eluted from its matrix with a simple water elution step. FTA Elute's chemically modified matrix inactivates many of the PCR inhibitors present in biological samples by permanently fixing them to the matrix. When a sample is applied to FTA Elute, the chemistries in the matrix lyse intact cells and dissociate proteins from nucleic acids. As the drying process proceeds, inhibitory substances are fixed to the matrix. DNA is subsequently eluted from the matrix providing a source of template for amplification dependent assays such as STR and allelic discrimination analysis. We use both blood and buccal samples to show that Indicating FTA Elute is functionally indistinguishable from FTA Elute via STR analysis using Promega's PowerPlex 16 and PCR amplicon analysis using BioRad's Experion Bioanalyzer. DNA was eluted from Indicating FTA Elute containing dried clear biological fluids including buccal cells, urine, saliva and tissue culture. DNA yields eluted from Indicating FTA Elute containing buccal cells can yield as much as 36 ngs per 2 mm punch in 30 μ l water as determined via Real Time PCR on ABI's 7900HT. DNA eluted from buccal cells placed onto Indicating FTA Elute was used to show paternity analysis using the Powerplex 16 STR kit and allelic discrimination assays involving CYP2C9*2 and CYP2C19*2 SNP's. Real time PCR was used to generate maps showing the distribution area of buccal cells after transfer from a foam applicator to Indicating FTA Elute and outlined by the indicator color.