

Material Method Validation: ETO Treated Vivacon Concentrators for DNA Samples

Our laboratory has traditionally used untreated Vivacon concentrators to perform cleanup and concentration of samples after extraction with Stain Extraction Buffer and Phenol/Chloroform/Isoamyl Alcohol. We noticed several instances of observed contaminating DNA in reagent blanks that could be traced back to the Vivacon manufacturing staff. Therefore, we undertook a concordance study to compare the ETO-treated Vivacon with the untreated version. ETO treatment is supposed to sterilize the Vivacon concentrator without affecting the membrane contained inside the device. The part number for the ETO-treated Vivacons used in this study is VN02H43ETO.

Three known blood stains and two known saliva swabs were extracted using Stain Extraction Buffer and Phenol/Chloroform/Isoamyl Alcohol (P/C/I). The aqueous phase was removed during the P/C/I portion of the extraction process and placed into 1.5 ml microcentrifuge tubes. Approximately 500 μ l was recovered. Next, about half of the aqueous phase was placed into an untreated Vivacon concentrator along with 1.5 ml of Tris/EDTA buffer (TE). The remaining half of the aqueous phase was placed into an ETO-treated Vivacon concentrator along with 1.5 ml of TE. The concentrators were then spun in the centrifuge according to normal protocol and approximately 28 μ l of DNA extract was recovered. All extracts were quantified, amplified, and run on the 3130xl Genetic Analyzer. Quantification values were similar for both ETO-treated Vivacons and untreated Vivacons. Additionally, complete DNA profiles were obtained for all extracts and RFU values for these profiles were similar. No DNA was observed in either reagent blank.

In summary, the ETO-treated Vivacon produced similar results to the untreated version. Use of the ETO-treated Vivacon has the added advantage of eliminating contamination coming from the manufacturer. Based on the results of this concordance study, ETO-treated Vivacons are recommended for use on casework samples.

Table 1 - Quantifier Results

Sample	Untreated Vivacon (ng/ μ l)	ETO-treated Vivacon (ng/ μ l)
B-11	1.12	0.828
B-12	1.01	1.12
B-13	1.78	1.41
Ryan	31.1	35.9
N. Ford	14.0	9.33
Reagent Blank	none	none

Table 2 - Capillary Electrophoresis Results

Sample	Untreated Vivacon (average RFU)	ETO-treated Vivacon (average RFU)
B-11	865.7	924.1
B-12	1005.1	770.7
B-13	682.7	925.5
Ryan	549.8	665.0
N. Ford	376.0	446.8
Reagent Blank	none	none

NOTE: *The information contained in this Applications Note was provided by a forensics laboratory that has requested to remain anonymous.*

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