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Reproducible high yields of high-quality DNA using MagAttract DNA Blood M48 Kits on the BioRobot M48 workstation

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When isolating DNA, high yield is necessary for some applications, while high concentration is required for others. Both these needs are met by the flexible sample volumes and elution volumes provided by the BioRobot M48 workstation and MagAttract* DNA Blood Kits. The purpose of this study was to evaluate reproducibility of DNA yield, and DNA concentration using MagAttract magnetic particle technology in combination with the BioRobot M48 workstation.

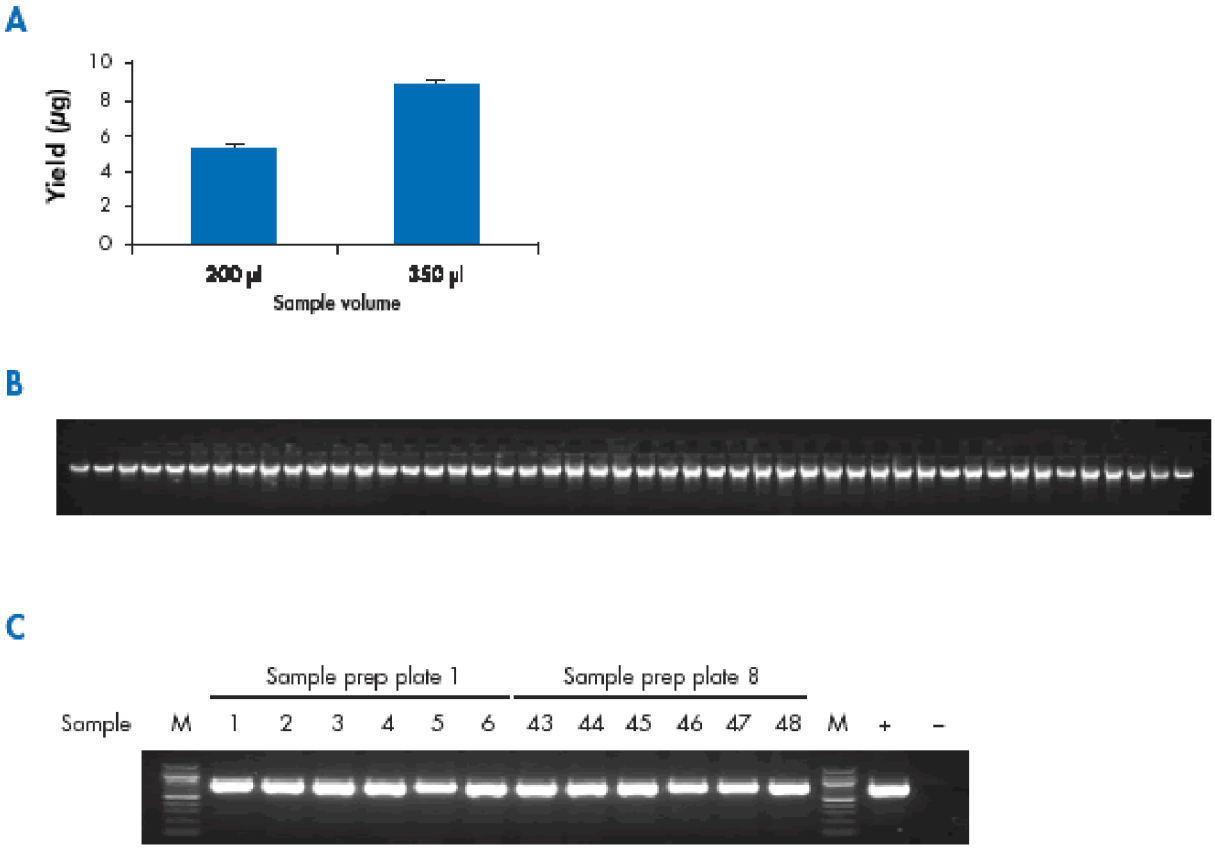
Materials and methods

Fully automated DNA purification from 200 µl (4.0 x10^6 white cells/ml) or 350 µl (4.4 x 10^6 white cells/ml) EDTA-preserved whole blood samples from two donors was performed using MagAttract DNA Blood M48 Kits on the BioRobot M48 workstation. DNA yield was quantified by measuring absorbance (A_{260}) with correction for background. A 900 bp fragment of the single-copy *MECL-1* gene (proteasome-like subunit) was amplified using 5 µl DNA in a 50 µl PCR.

Results

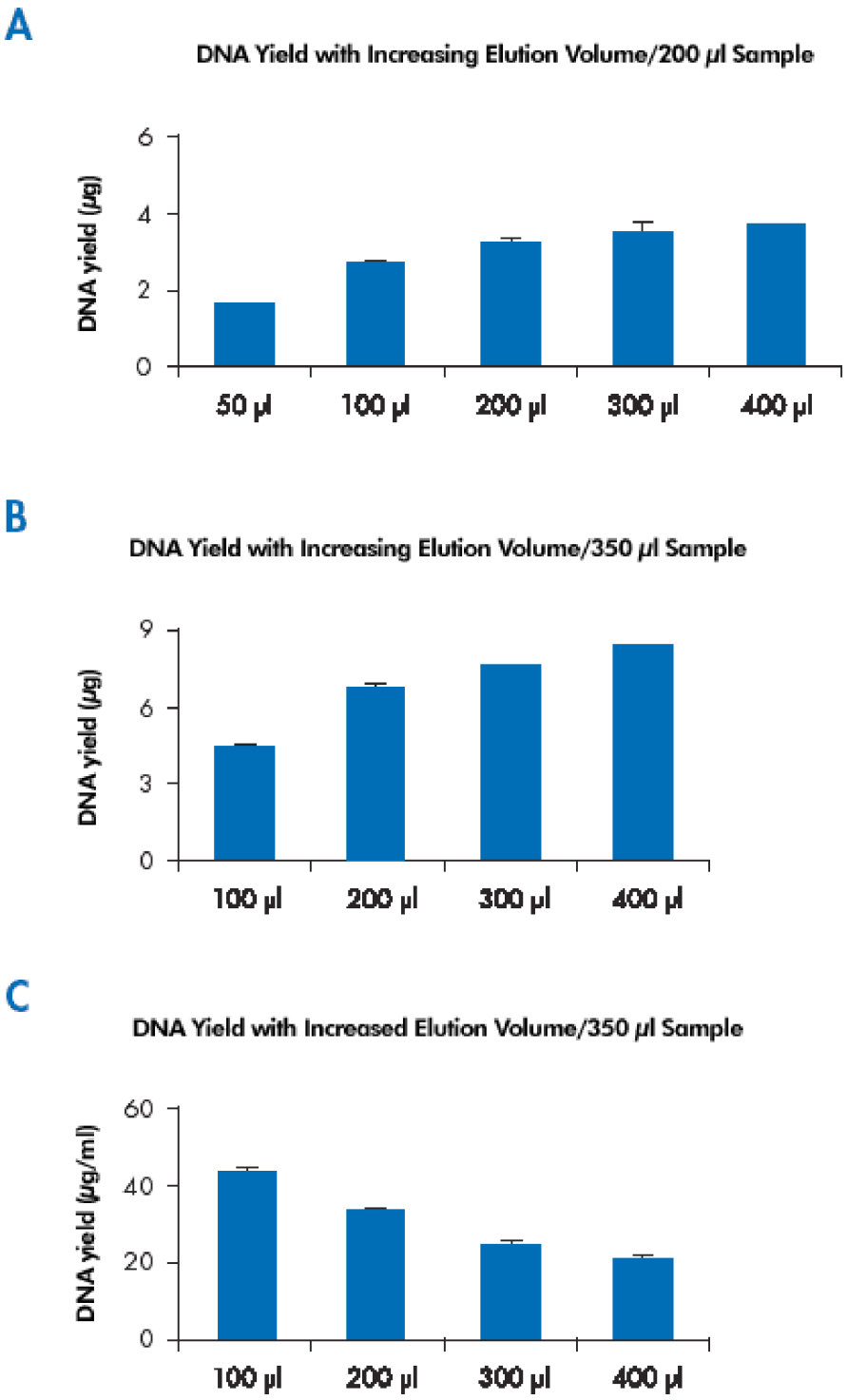
Average DNA yield and standard deviation for 48 x 350 µl whole blood samples was 8.8 µg ± 0.26 µg. In addition, clean, strong bands were observed when this DNA was used for PCR amplification of the single-copy *MECL-1* gene (Figure "High Yields and Reproducible Purification of High-Quality DNA"). DNA yields for 200 µl and 350 µl blood samples are shown (Figure "High Yields and Reproducible Purification of High-Quality DNA "). Using variable elution volumes, total yield increases with increasing elution volume (see Figure "Variable Elution Volumes Allow a Range of Yields and Concentrations"), while the concentration decreases.

High Yields and Reproducible Purification of High-Quality DNA



*Average DNA yields were measured by absorbance (A_{260}) from 48 x 200 µl and 48 x 350 µl whole blood samples from the same blood donor isolated using the BioRobot M48 workstation (**A**). 10 µl purified DNA from each 350 µl blood sample (200 µl elution volume) is visualized using a 0.8% agarose gel (**B**). DNA purified from samples 1 – 6 and 43 – 48 was used to amplify the single-copy* MECL-1 *gene in a 50 µl (5 µl DNA per reaction) PCR. **M**: Marker; **+**: Positive control; **–**: negative control (**C**).*

Variable Elution Volumes Allow a Range of Yields and Concentrations



*Average DNA yields from 200 µl (**A**) and 350 µl (**B**) blood samples using 50–400 µl elution volumes. Six replicates were purified and analyzed for each elution volume. Average DNA concentration from 350 µl blood samples, using 100–400 µl elution volumes (**C**).*

Conclusion

- MagAttract technology and the BioRobot M48 workstation provide high-quality DNA from blood in a fully-automated procedure
- Variable sample and elution volumes allow the user to tailor DNA concentration and yield to suit their downstream application
- DNA purified using MagAttract magnetic particles and the BioRobot M48 provides consistent high performance in

sensitive PCR

The BioRobot M48 is intended as a microtiter diluting and dispensing device. No claim or representation is intended for their use in identifying any specific organism or for a specific clinical use (diagnostic, prognostic, therapeutic, or blood banking). It is the user's responsibility to validate the performance of the BioRobot M48 for any particular use, since their performance characteristics have not been validated for any specific organism. The BioRobot M48 may be used in clinical diagnostic laboratory systems after the laboratory has validated their complete system as required by CLIA '88 regulations in the U.S. or equivalents in other countries.

** MagAttract Kits are intended as general-purpose devices. No claim or representation is intended for their use to identify any specific organism or for specific clinical use (diagnostic, prognostic, therapeutic, or blood banking). It is the user's responsibility to validate the performance of MagAttract Kits for any particular use, since the performance characteristics of these kits have not been validated for any specific organism.*

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