DNA genotek

High-throughput DNA purification from Oragene/saliva samples† with the Magtration® 12GC

P. Lem‡, J. Chartier‡, J. Saini**, and K. Obata††

‡ DNA Genotek, Ottawa, Ontario, Canada

** Cortex Biochem Inc., San Leandro, CA

†† PSS Bio Instruments Inc., Pleasanton, CA, USA

2006-06-29

The Magtration®12GC is an automated high-throughput DNA purification system that uses paramagnetic-particle technology. The 12GC can purify up to twelve Oragene®/saliva samples in 30 minutes, with excellent DNA yields.

Introduction

Large-scale population studies may involve the collection of thousands of patient samples. Manual purification of DNA from these samples can be time- and labor-intensive. The Magtration 12GC from PSS Bio Instruments is an automated DNA purification robot that uses pre-filled MagaZorb® cartridges for fast and convenient DNA purification. The purpose of this study was to determine the DNA yield of saliva samples collected with Oragene and processed with the 12GC.

Materials and methods

DNA collection

Oragene self-collection kits (containing 2 mL of Oragene solution) were used to collect 2 mL of saliva from 20 donors. Prior to purification with the 12GC, the Oragene/saliva samples were incubated overnight at 50°C.

Automated DNA purification

DNA was extracted from 200 µL of each Oragene/saliva sample using MagaZorb DNA common kit-200 cartridges on the 12GC system. An integrated circuit card with the DNA Common-200 protocol was supplied with the instrument. The elution volume was 200 µL.

DNA analysis

Purified DNA was quantified by absorbance at 260 nm. The $A_{260/280}$ ratio was also determined.

Results

Figure 1 shows DNA yields for the 20 Oragene/saliva samples. The median DNA yield was 3.8 µg per 200 µL of starting sample and the median $A_{260/280}$ ratio was 1.95.

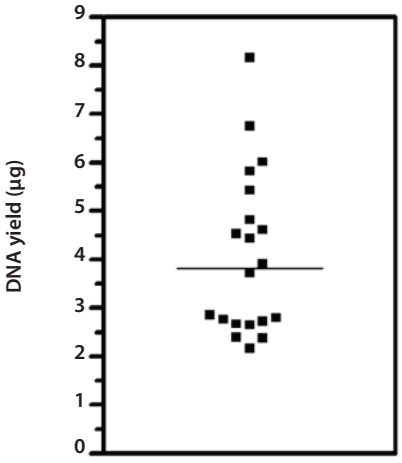

***Figure 1**: Scattergram of DNA yields from 200 µL of Oragene/saliva sample. The horizontal line represents the median yield — 3.8 µg.*

† Saliva samples were collected with Oragene®•DNA or Oragene®•DISCOVER.

Discussion and conclusions

The 12GC robot can purify PCR-quality DNA from whole blood, bacteria, viruses, and tissues. From whole blood, the expected DNA yield is 2-4 µg/100 µL, with an $A_{260/280}$ ratio of 1.75 to 1.951. The median yield of 3.8 µg/200 µL for the Oragene/saliva samples compares favorably to the values for blood, considering that the saliva sample is diluted 1:1 with Oragene solution in the collection vial. The median $A_{260/280}$ ratio of 1.95 indicates that the 12GC is effective at removing protein contaminants.

To purify the entire 4 mL Oragene/saliva sample at once, the Magtration System 8Lx may be used instead of the 12GC. The 8Lx uses similar magnetic particle technology as the 12GC and can process sample volumes up to 7 mL.

In summary, the 12GC robot can purify up to twelve Oragene/saliva samples in 30 minutes, with excellent DNA yields.

References

1 Magtration®-MagaZorb® DNA common kit-200 protocol. PSS Bio Instruments. Revision 2.0.