Plasma/Serum RNA/DNA Purification Mini Kit

Norgen's Plasma/Serum RNA/DNA Purification Mini Kit provides a fast, reliable, reproducible and simple procedure for the sequential isolation of circulating RNA, exosomal RNA and Cell-Free Circulating DNA (cfc) from the same Plasma/Serum Sample. It can sequentially isolated RNA and DNA from small plasma/serum input ranging from 10 µL to 200 µL. The kit is designed to isolate all sizes of circulating RNA, including microRNA, all sizes of exosomal RNA as well as all sizes of cfc-DNA from fresh or frozen plasma or serum samples. Norgen's Plasma/Serum RNA Purification Kit provides a clear advantage over other available kits in that it does not require Phenol/Chloroform or any Protease treatments for the isolation of plasma/serum RNA or DNA. RNA and DNA can be eluted into a flexible elution volume ranging from 10 µL to 25 µL. Purified RNA can be used in a number of sensitive downstream applications including reverse transcription qPCR, reverse transcription PCR, NGS, Northern blotting, RNase protection and primer extension, and expression array assays. Purified DNA can be used in a number of sensitive downstream applications including PCR, qPCR, methylation-sensitive PCR and Southern Blot analysis.

Kit Specifications			
Minimum Plasma/Serum Input	10 µL	Maximum Plasma/Serum Input	200 µL
Time to Complete 10 Purifications	15-20 minutes	Size of DNA Purified	≥ 50 bp
		Size of RNA Purified	All sizes, including miRNA and small RNA (<200 nt)

Plasma/Serum RNA/DNA Purification Mini Kit Benefits	
Fast and easy processing	Rapid spin-column format allows for the processing of multiple samples in less than 20 minutes
Versatile plasma and serum input volumes	Isolate RNA/DNA from 10 µL - 200 µL of plasma/serum
Concentrate Cell-Free Circulating DNA	Cell-Free Circulating DNA present in input volumes of 10 µL - 400 µL are concentrated into final elution volumes of 10 µL - 50 µL
Isolate inhibitor-free DNA	Purified DNA can be used in a number of sensitive downstream applications including PCR, qPCR, methylation-sensitive PCR and Southern Blot analysis
Isolate all sizes of circulating RNA and exosomal RNA	This kit allows for the isolation of all sizes of fragmented circulating RNA and exosomal RNA, including microRNA

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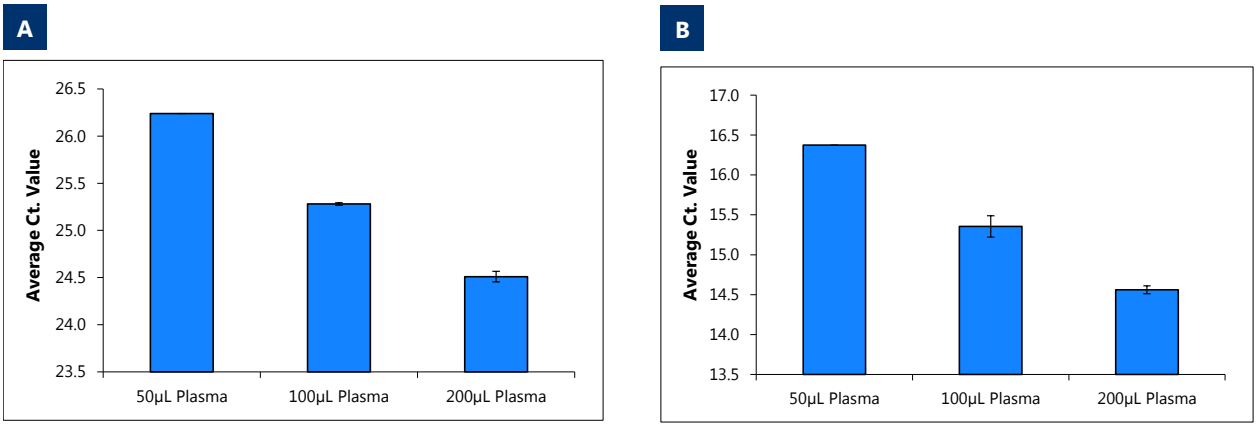

Figure 1. Purification of Circulating RNA from Different Plasma Volumes. Norgen's Plasma/Serum RNA/DNA Purification Mini Kit was used to purify circulating RNA from 50 µL, 100 µL and 200 µL plasma prepared from blood collected on EDTA. Three microlitres of the purified RNA was then used as the template in RT-qPCR reactions to detect miR-21 (Figure 1A) and the housekeeping 5S rRNA transcript (Figure 1B). The relative amount of both the miR-21 (Figure 1A) and the 5S rRNA transcript (Figure 1B) is linearly increasing with increasing the sample input volume.

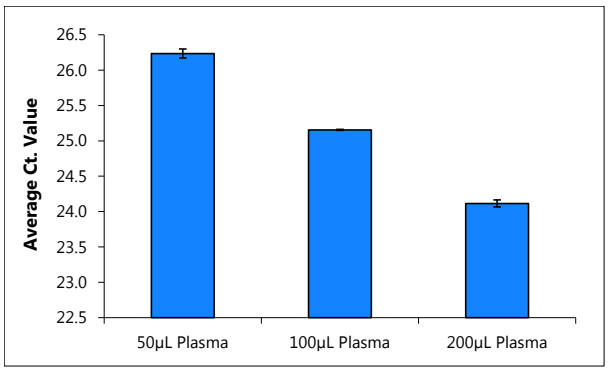

Figure 2. Purification of Cell-Free Circulating DNA from Different Plasma Volumes. Norgen's Plasma/Serum RNA/DNA Purification Mini Kit was used to purify cell-free circulating DNA from 50 µL, 100 µL and 200 µL plasma prepared from blood collected on EDTA. Three microlitres of the purified DNA was then used as the template in qPCR reactions to detect the housekeeping 5S rRNA transcript. The average Ct value for the 5S rRNA gene is linearly decreasing with increasing the sample input volume.

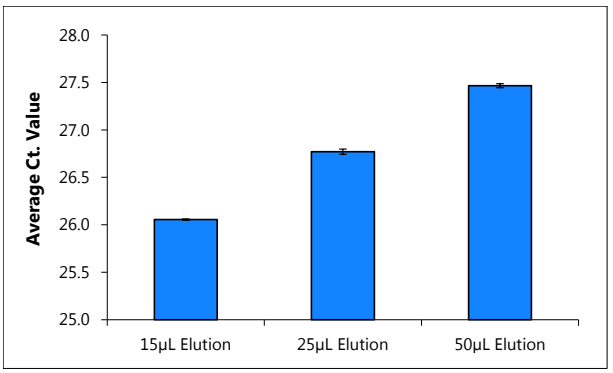

Figure 3. Eluting Purified Cell-Free Circulating DNA from into Different Elution Volumes. Norgen's Plasma/Serum RNA/DNA Purification Mini Kit was used to purify circulating cell-free circulating DNA from 200 µL plasma prepared from blood collected on EDTA and eluted in 15 µL, 25 µL and 50 µL. Three microlitres of the purified cell-free circulating DNA was then used as the template in qPCR reactions to detect the housekeeping 5S rRNA gene. The relative amount of the 5S rRNA gene is decreasing with increasing the elution volume indicating the efficient concentration of the plasma circulating cell-free circulating DNA in a very low elution volume.

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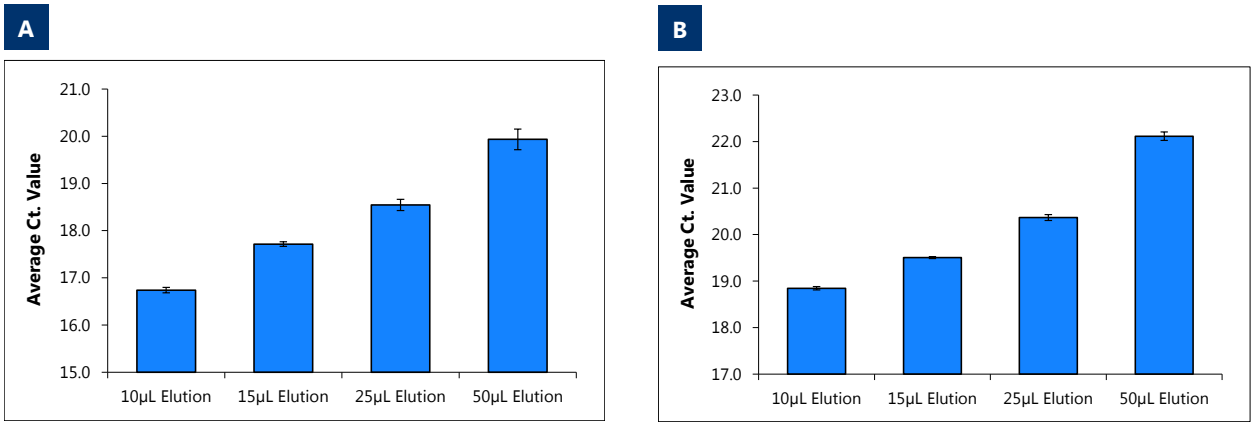

Figure 4. Eluting Purified Circulating RNA from into Different Elution Volumes. Norgen's Plasma/Serum RNA/DNA Purification Mini Kit was used to purify circulating RNA from 200 µL plasma prepared from blood collected on EDTA and eluted in 10 µL, 15 µL, and 25 µL. Three microlitres of the purified RNA was then used as the template in RT-qPCR reactions to detect miR-21 (Figure 3A) and the housekeeping 5S rRNA transcript (Figure 3B). The relative amount of both the miR-21 (Figure 3A) and the 5S rRNA transcript (Figure 3B) is decreasing with increasing the elution volume indicating the efficient concentration of the plasma circulating RNA in a very low elution volume.

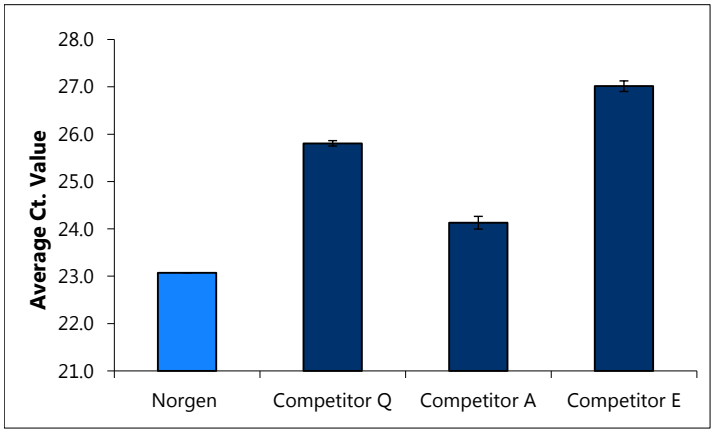

Figure 5. Effective and Consistent Detection of miRNA from Plasma. Norgen's Plasma/Serum RNA/DNA Purification Mini Kit can effectively isolate miRNA from plasma. Circulating miRNA was isolated from 200 µL plasma using Norgen's Plasma/Serum RNA/DNA Purification Mini Kit, competitor Q's kit and competitor E's kit. Circulating miRNA was isolated from 600 µL using competitor A's kit. Stem loop RT-qPCR using primers specific to miR-21 was performed. In brief, 1 microliter of the 15 µL purified RNA using Norgen's Plasma/Serum RNA/DNA Purification Mini Kit, competitor Q's kit and 3.3 microliters of the 50 µL purified RNA using competitor E's kit and competitor A's kit was then subjected to a 20 µL reverse transcription using miR-21 stem-loop reverse primer. Three microliters of the reverse transcription was used in a 20 µL real-time PCR reaction with primers to detect the human miR-21. Norgen's Plasma/Serum RNA Purification Kit is the only product that showed the most consistent and the highest recovery of the miR-21 transcripts as compared to the other isolation methods. The recovery of the miRNA from 200µL plasma was higher than that recovered from RNA purified from 600µL using competitor A's kit.

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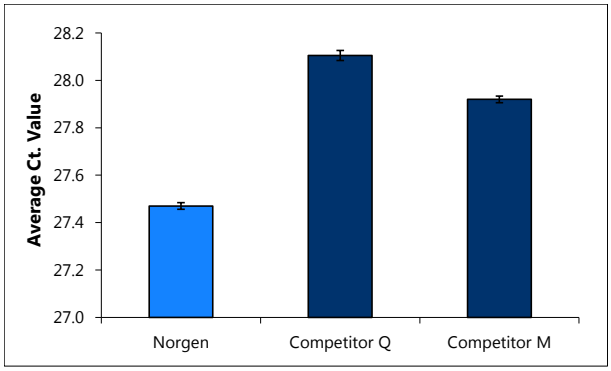

Figure 6. Effective and Consistent Detection of Cell-Free Circulating DNA from Plasma. Norgen's Plasma/Serum RNA/DNA Purification Mini Kit can effectively isolate cell-free circulating DNA from plasma. Cell-Free Circulating DNA was isolated from 200 µL plasma using Norgen's Plasma/Serum RNA/DNA Purification Mini Kit, competitor Q's kit and competitor M's kit. Three microliters of the purified DNA was used in a 20 µL real-time PCR reaction with primers to detect the housekeeping 5S rRNA gene. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Kit is the only product that showed the most consistent and the highest recovery of the housekeeping 5S rRNA gene as compared to the other isolation methods.

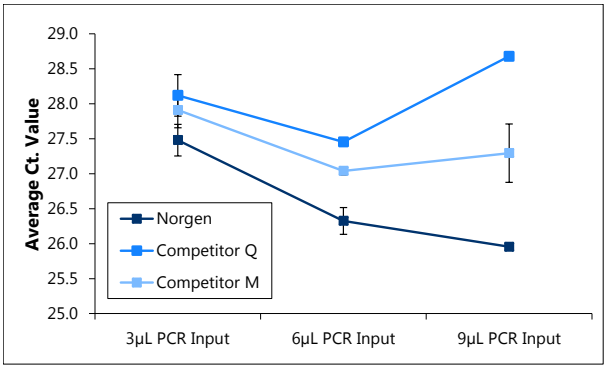

Figure 7. Determination of the Amount of Inhibition Present in Plasma Cell-Free Circulating DNA Samples when Detecting the Human 5S Gene. DNA was isolated from 0.2 mL of plasma using Norgen's Plasma/Serum RNA/DNA Purification Mini Kit, competitor Q's kit and competitor M's kit. Increasing volumes of the elution (3, 6 and 9 L) were used in a 20 L qPCR reaction to observe any increase in Ct value. An increase in Ct value with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used in the PCR did not greatly affect the Ct value generated from Norgen samples, however inhibition was observed when 9 L of competitor Q's kit elution was used as the template.

Plasma/Serum RNA/DNA Purification Mini Kit Contents:

1. Lysis Buffer A
2. Wash Solution A
3. Elution Solution A
4. Elution Buffer B
5. Micro Spin Columns
6. Collection Tubes
7. Elution tubes (1.7 mL)
8. Product Insert

Shipping Conditions

The Plasma/Serum RNA/DNA Purification Mini Kit is shipped at room temperature.

Customer-Supplied Reagents and Equipment

- Benchtop microcentrifuge
- Micropipettors
- 96 – 100% ethanol
- β - Mercaptoethanol

Storage Conditions

All buffers should be kept tightly sealed and stored at room temperature (15-25°C) for up to 2 years without showing any reduction in performance. It is recommended to warm Lysis Buffer A for 20 minutes at 60°C if any salt precipitation is observed.

Cat #	Description	Quantity
55200	Plasma/Serum RNA/DNA Purification Mini Kit	50 preps

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