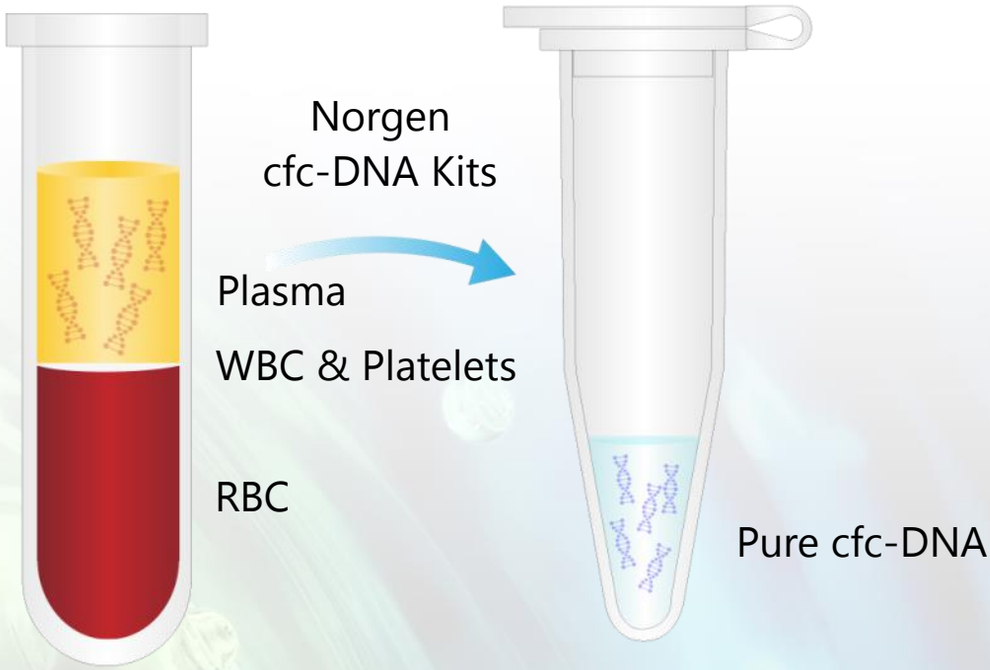
NORGEN BIOTEK CORP.

The Sample Preparation Experts

CELL-FREE CIRCULATING DNA AND RNA FROM BODILY FLUIDS

The New Standard in RNA and DNA Purification, Best-in-Class, Pure & Simple

Isolation of inhibitor-free RNA, microRNA and DNA for any application



www.norgenbiotek.com

An ISO 13485:2003, ISO 9001:2008 & ISO 15189:2012 Certified Company

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Norgen Biotek is dedicated to providing our customers with first class sample preparation kits for RNA, microRNA, DNA, protein and exosome purification, clean-up and concentration, as well as preservatives for nucleic acid (DNA and RNA) stabilization in various bodily fluids for both research and diagnostic applications; and to providing dedicated and expert support services to our customers and commercial partners worldwide.

Norgen is an **ISO 9001:2008, ISO 13485:2003 and ISO 15189:2012** registered company, indicating our commitment to quality.

ISO 9001:2008 ISO 13485:2003 ISO 15189:2012 CE

V 1.0

Ordering Information

To Order by Phone:
Telephone: (905) 227-8848
Toll Free in North America: 1-866-667-4362

To Order by Fax:
(905) 227-1061

To Order by Email:
orders@norgenbiotek.com

To Order by Mail:
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3430 Schmon Parkway
Thorold, ON
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Telephone Orders
Customer service representatives are available to receive orders Monday through Friday from 9:00 A.M. to 5:30 P.M. EST (Eastern Standard Time).

When placing an order, please be prepared to provide us with the following information:

1. Purchase order number
2. Customer number (if known)
3. Billing Address
4. Shipping Address
5. Name of person to whose attention the order should be shipped
6. Name, telephone number and email of contact person
7. Product catalogue number, description, size and quantity

Email and Fax Orders
We also accept orders by email, fax and mail. When placing an order by email, fax or mail, please ensure that the information listed above is included in order to expedite ordering.

Technical Support

Contact our Technical Support Team between the hours of 9:00 and 5:30 EST (Eastern Standard Time) at (905) 227-8848 or Toll Free in North America at 1-866-667-4362.

Technical support can also be obtained from our website (www.norgenbiotek.com) or through email at techsupport@norgenbiotek.com.

Plasma/Serum Sample Preparation Kits

Norgen's Cell-Free Circulating DNA and RNA Purification Kits provide an efficient method for the purification of fragmented free-circulating DNA, RNA or total nucleic acids from variable volumes of plasma/serum or urine samples. The kits are able to isolate all sizes of circulating DNA or RNA. These kits provide an advantage over other available kits in that they do not require extension tubes for the purification of free-circulating DNA or RNA from large sample volumes. The purified cell-free circulating DNA or RNA are eluted in an elution solution that is compatible with PCR, qPCR, methylation-sensitive PCR, Southern blot analysis, reverse transcription PCR, Northern blotting, RNase protection, primer extension and expression array assays.

Sample Preparation Selection Table:

Kit	Cat. #	Kit size	Sample Size
Cell-Free Circulating DNA Purification Kits			
Plasma/Serum Cell-Free Circulating DNA Purification Micro Kit	55500	50 preps	10-200 µL
Plasma/Serum Cell-Free Circulating DNA Purification Mini Kit	55100	50 preps	200-500 µL
Plasma/Serum Cell-Free Circulating DNA Purification Midi Kit	55600	20 preps	1-4 mL
Plasma/Serum Cell-Free Circulating DNA Purification Maxi Kit	55800	10 preps	4-10 mL
Urine Cell-Free Circulating DNA Purification Mini Kit	56600	50 preps	200 µL-2 mL
Urine Cell-Free Circulating DNA Purification Midi Kit	56700	20 preps	2-10 mL
Urine Cell-Free Circulating DNA Purification Maxi Kit	56800	10 preps	10-30 mL
Cell-Free Circulating RNA Purification Kits			
Plasma/Serum RNA Purification Mini Kit	55000	50 preps	50-200 µL
Plasma/Serum RNA Purification Midi Kit	56100	20 preps	250 µL-1.5 mL
Plasma/Serum RNA Purification Maxi Kit	56200	10 preps	2-5 mL
Urine Cell-Free Circulating RNA Purification Mini Kit	56900	50 preps	250 µL-2 mL
Urine Cell-Free Circulating RNA Purification Midi Kit	57000	20 preps	2-10 mL
Urine Cell-Free Circulating RNA Purification Maxi Kit	57100	10 preps	10-30 mL
Total Nucleic Acid *Purification Kits*			
Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit	56300	50 preps	50-200 µL
Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit	56400	20 preps	250 µL-1.5 mL
Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit	56500	10 preps	2-5 mL
Urine Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit	59900	50 preps	250 µL-2 mL
Urine Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit	60000	20 preps	2-10 mL
Urine Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit	60100	10 preps	10-30 mL

Plasma/Serum Cell-Free Circulating DNA Purification Micro Kit Cat. # 55500

Rapid and simple isolation of cell-free circulating DNA from plasma/serum samples

This kit provides a fast, reliable and convenient spin column method for the isolation of high quality, high purity and inhibitor-free cell-free circulating DNA (cfc-DNA) from small fresh or frozen plasma/serum sample volumes ranging from 10 µL up to 200 µL.

The kit is designed to isolate all sizes of cfc-DNA from either fresh or frozen plasma/serum samples and the purified DNA is eluted into a flexible elution volume ranging from 25 µL to 50 µL. The purified plasma/serum cfc-DNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive PCR and Southern Blot analysis, microarrays and NGS.

Features and Benefits

- For rapid and simple purification of all sizes of circulating DNA from plasma and serum samples
- Isolate viral and bacterial DNA
- Versatile plasma and serum input volumes (10 µL - 200 µL)
- Concentrate circulating DNA into a flexible elution volume ranging from (25 µL - 50 µL)
- Isolate inhibitor-free cell-free circulating DNA
- Purify high-quality DNA in 15-20 minutes
- Compatible with Streck Cell-Free DNA BCT® Tubes

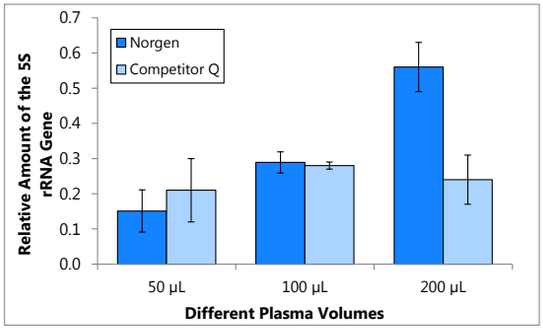

Figure 1. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Micro Kit was used to purify circulating DNA from 50 µL, 100 µL and 200 µL plasma prepared from blood collected on citrate as an anticoagulant, and compared to Competitor Q's kit. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the relative amount of the purified housekeeping 5S rRNA gene. The relative amount of the 5S rRNA gene increases linearly with increasing the sample input volume. Norgen's kit showed the most consistent and the highest recovery of the housekeeping 5S rRNA gene as compared to the other isolation method.

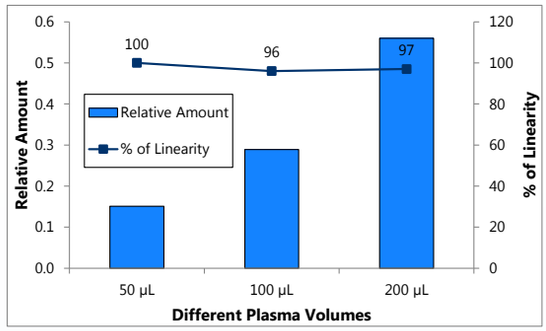

Figure 2. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Micro Kit as used to purify circulating DNA from 50 µL, 100 µL and 200 µL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the linearity of the purified housekeeping 5S rRNA gene from the different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Micro Kit was able to recover 96% of the 5S rRNA gene from 100 µL plasma relative to the amount that is present in 50 µL plasma. Moreover, 97% of the 5S rRNA gene was recovered from 200 µL plasma relative to the amount that is present in 100 µL plasma.

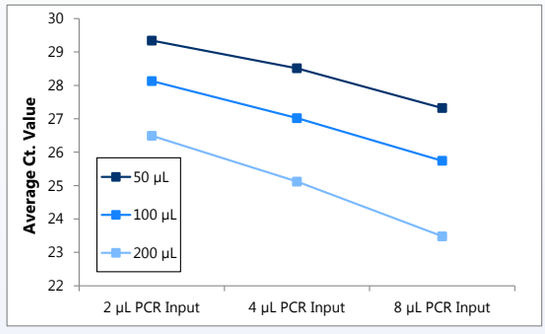

Figure 3. DNA was isolated from 50 µL, 100 µL and 200 µL plasma using Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Micro Kit. Increasing volumes of the elution (2, 4 and 8 L) were used in a 20 L qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR and in fact the Ct values tend to decrease with increasing the PCR input volume indicating that DNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

Feature	Specifications
Minimum Plasma/Serum Input	10 µL
Maximum Plasma/Serum Input	200 µL
Elution Volume	25-50 µL
Time to Complete Purifications	15-20 minutes
Size of Purified DNA	All sizes
Average Yield	Variable depending on specimen

Plasma/Serum Cell-Free Circulating DNA Purification Mini Kit Cat. # 55100

Rapid and simple isolation of cell-free circulating DNA from plasma/serum samples

This kit provides a fast, reliable and convenient spin column method for the isolation of high quality, high purity and inhibitor-free cell-free circulating DNA (cfc-DNA) from plasma/serum sample volumes ranging from 200 µL up to 500 µL.

The kit is designed to isolate all sizes of cfc-DNA from either fresh or frozen plasma/serum samples and the purified DNA is eluted into a flexible elution volume ranging from 50 µL to 100 µL. The purified plasma/serum cfc-DNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive PCR and Southern Blot analysis, microarrays and NGS

Features and Benefits

- For rapid and simple purification of all sizes of circulating DNA from plasma and serum samples
- Isolate viral and bacterial DNA
- Versatile plasma and serum input volumes (200 µL - 500 µL)
- Concentrate circulating DNA into a flexible elution volume ranging from (50 µL - 100 µL)
- Isolate inhibitor-free cell-free circulating DNA
- Purify high-quality DNA in 15-20 minutes
- Compatible with Streck Cell-Free DNA BCT® Tubes

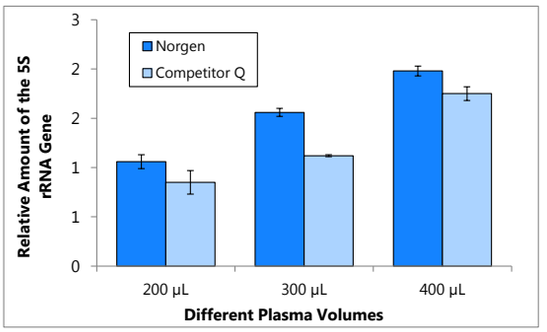

Figure 1. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Mini Kit was used to purify circulating DNA from 200 µL, 300 µL and 400 µL plasma prepared from blood collected on citrate as an anticoagulant in comparison to Competitor Q's kits. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the relative amount of the purified housekeeping 5S rRNA gene. The relative amount of the 5S rRNA gene increases linearly with increasing the sample input volume. Norgen's kit showed the most consistent and the highest recovery of the housekeeping 5S rRNA gene as compared to the other isolation method.

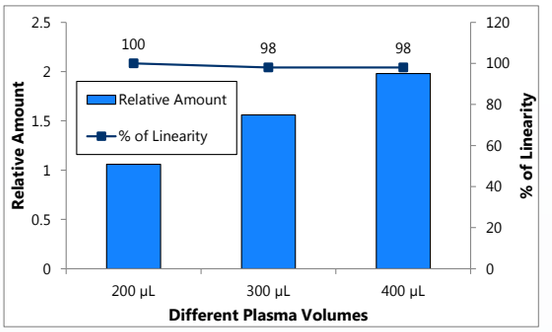

Figure 2. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Mini Kit was used to purify circulating DNA from 200 µL, 300 µL and 400 µL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the linearity of the purified housekeeping 5S rRNA gene from the different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Mini Kit was able to recover 98% of the 5S rRNA gene from 300 µL plasma relative to the amount that is present in 200 µL plasma. Moreover, 98% of the 5S rRNA gene was recovered from 400 µL plasma relative to the amount that is present in 300 µL plasma.

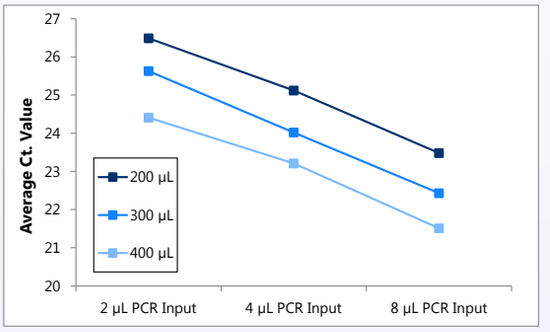

Figure 3. DNA was isolated from 200 µL, 300 µL and 400 µL plasma using Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Mini Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR, and in fact the Ct values tend to decrease with increasing the PCR input volume indicating that DNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

Feature	Specifications
Minimum Plasma/Serum Input	200 µL
Maximum Plasma/Serum Input	500 µL
Elution Volume	50-100 µL
Time to Complete Purifications	15-20 minutes
Size of Purified DNA	All sizes
Average Yield	Variable depending on specimen

Plasma/Serum Cell-Free Circulating DNA Purification Midi Kit Cat. # 55600

Rapid and simple isolation of cell-free circulating DNA from plasma/serum samples

This kit provides a fast, reliable and convenient method to purify and concentrate using a two column method for the isolation of high quality, high purity and inhibitor-free cell-free circulating DNA (cfc-DNA) from fresh or frozen plasma/serum sample volumes ranging from 1 mL - 4 mL.

The first column will handle the large volume input of bodily fluids that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification and concentration are provided in one convenient and fast kit for the easy processing of large input volumes of bodily fluids.

The purified plasma/serum cfc-DNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive PCR and Southern Blot analysis, microarrays and NGS, for various analyses: Fetal DNA screening, genotyping, and other oncology and autoimmune diseases research.

Features and Benefits

- Isolate all sizes of circulating DNA from plasma and serum samples
- Isolate viral and bacterial DNA
- Versatile plasma and serum input volumes (1 mL – 4 mL)
- Concentrate circulating DNA into a flexible elution volume ranging from (50 µL - 100 µL)
- Isolate inhibitor-free cell-free circulating DNA
- Purify high-quality DNA in 40-45 minutes
- Compatible with Streck Cell-Free DNA BCT® Tubes

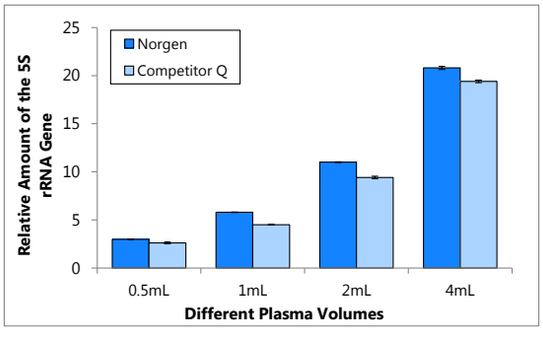

Figure 1. Purification of cell-free circulating DNA from different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Midi Kit was used to purify circulating DNA from 0.5 mL, 1 mL, 2 mL and 4 mL plasma prepared from blood collected on citrate as an anticoagulant in comparison to Competitor Q's kits. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the relative amount of the purified housekeeping 5S rRNA gene. The relative amount of the 5S rRNA gene increases linearly with increasing the sample input volume. Norgen's kit showed the most consistent and the highest recovery of the housekeeping 5S rRNA gene as compared to the other isolation method.

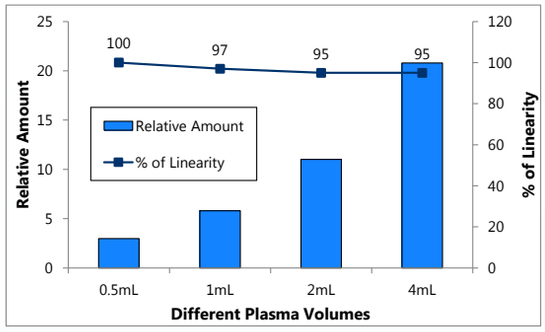

Figure 2. Linearity of DNA purified from increasing plasma volumes using Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Midi Kit. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Midi Kit was used to purify circulating DNA from 0.5 mL, 1 mL, 2 mL and 4 mL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the linearity of the purified housekeeping 5S rRNA gene from the different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Midi Kit was able to recover 97% of the 5S rRNA gene from 1 mL plasma relative to the amount that is present in 0.5 mL plasma. Moreover, 95% of the 5S rRNA gene was recovered from 2 mL plasma relative to the amount that is present in 1 mL plasma. Additionally, 95% of the 5S rRNA gene was recovered from 4 mL plasma relative to the amount that is present in 2 mL plasma.

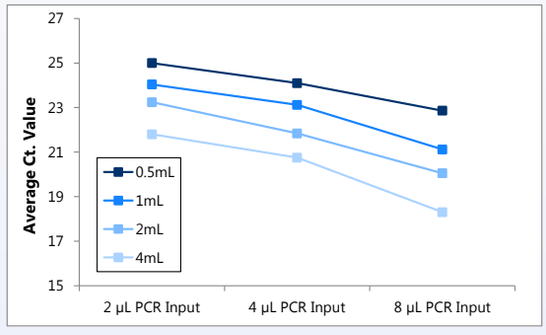

Figure 3. Determination of the amount of inhibition present in plasma cell-free circulating DNA samples when detecting the human 5S gene. DNA was isolated from 0.5 mL, 1 mL, 2 mL and 4 mL plasma using Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Midi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR, and in fact the Ct values tend to decrease with increasing the PCR input volume indicating that DNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

Feature	Specifications
Minimum Plasma/Serum Input	1 mL
Maximum Plasma/Serum Input	4 mL
Elution Volume	50-100 µL
Time to Complete Purifications	40-45 minutes
Size of Purified DNA	All sizes
Average Yield	Variable depending on specimen

Cell-Free Circulating DNA Purification Kits

Plasma/Serum Cell-Free Circulating DNA Purification Maxi Kit Cat. # 55800

Rapid and simple isolation of cell-free circulating DNA from plasma/serum samples

This kit provides a fast, reliable and convenient method to purify and concentrate using a two column system for the isolation of high quality, high purity and inhibitor-free cell-free circulating DNA (cfc-DNA) from fresh or frozen plasma/serum sample volumes ranging from 5 mL to 10 mL.

The first column will handle the large volume input of bodily fluids that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification and concentration are provided in one convenient and fast kit for the easy processing of large input volumes of bodily fluids.

The purified plasma/serum cfc-DNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive PCR, Southern Blot analysis, microarrays and NGS for various analyses including Fetal DNA screening, genotyping and other oncology and autoimmune disease research

Features and Benefits

- Efficient purification of DNA from large plasma and serum input volumes (5-10 mL)
- Rapid and simple purification of all sizes of circulating DNA from plasma and serum samples
- Two kits in one - purify and concentrate DNA from bodily fluids using a convenient two column system
- Concentrate circulating DNA into a flexible elution volume ranging from 50 µL - 100 µL
- Isolate inhibitor-free cell-free circulating DNA
- Compatible with Streck Cell-Free DNA BCT® Tubes

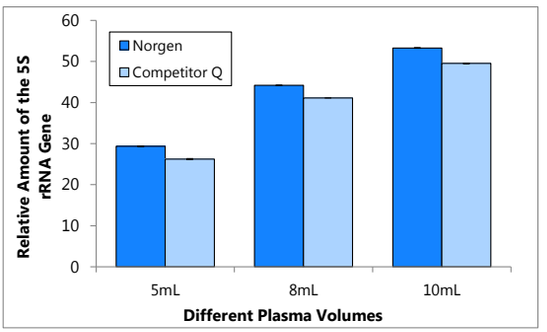

Figure 1. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Maxi Kit was used to purify circulating DNA from 5 mL, 8 mL and 10 mL plasma prepared from blood collected on citrate as an anticoagulant in comparison to Competitor Q's kits. Two milliliters of the purified DNA was then used as the template in qPCR reactions to assess the relative amount of the purified housekeeping 5S rRNA gene. The relative amount of the 5S rRNA gene increases linearly with increasing the sample input volume. Norgen's kit showed the most consistent and the highest recovery of the housekeeping 5S rRNA gene as compared to the other isolation method.

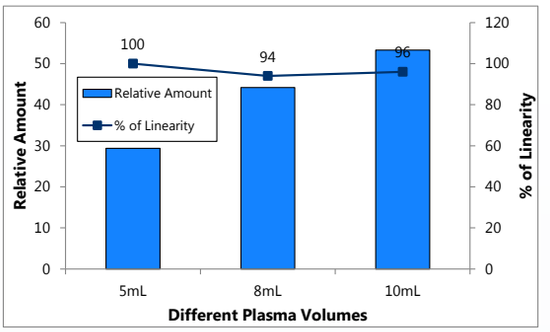

Figure 2. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Maxi Kit was used to purify circulating DNA from 5 mL, 8 mL and 10 mL plasma prepared from blood collected on citrate as an anticoagulant. Two milliliters of the purified DNA was then used as the template in qPCR reactions to assess the linearity of the purified housekeeping 5S rRNA gene from the different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Maxi Kit was able to recover 94% of the 5S rRNA gene from 8 mL plasma relative to the amount that is present in 5 mL plasma. Moreover, 96% of the 5S rRNA gene was recovered from 10 mL plasma relative to the amount that is present in 10 mL plasma.

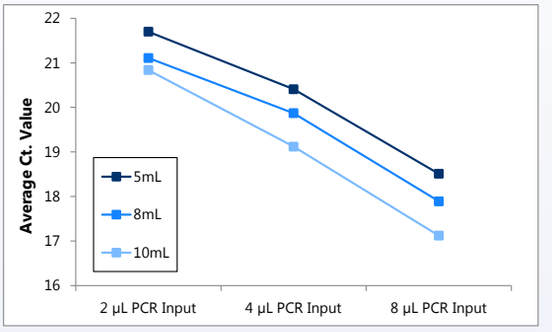

Figure 3. DNA was isolated from 5 mL, 8 mL and 10 mL plasma using Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Maxi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR and in fact the Ct values tend to decrease with increasing the PCR input volume indicating that DNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

Feature	Specifications
Minimum Plasma/Serum Input	5 mL
Maximum Plasma/Serum Input	10 mL
Elution Volume	50-100 µL
Time to Complete Purifications	40-45 minutes
Size of Purified DNA	All sizes
Average Yield	Variable depending on specimen

Urine Cell-Free Circulating DNA Purification Mini Kit — Cat. # 56600

Rapid and simple isolation of cell-free circulating DNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA as well as viral DNA from fresh, preserved or frozen urine samples from volumes ranging from 250 µL to 2 mL. All components for the purification are provided in one convenient and fast kit for the easy processing of small input volumes of bodily fluids.

The purified urine DNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive PCR and Southern Blot analysis, Microarrays and NGS..

Features and Benefits

- Isolate all sizes of circulating DNA from fresh, preserved or frozen urine samples
- Isolate viral DNA
- Versatile urine input volumes (250 µL - 2 mL)
- Concentrate circulating DNA into a flexible elution volume ranging from (50 µL - 100 µL)
- Isolate inhibitor-free cell-free circulating DNA
- Purify high-quality DNA in 15-20 minutes
- Compatible with Norgen's Urine Preservative and other commercially available urine preservatives

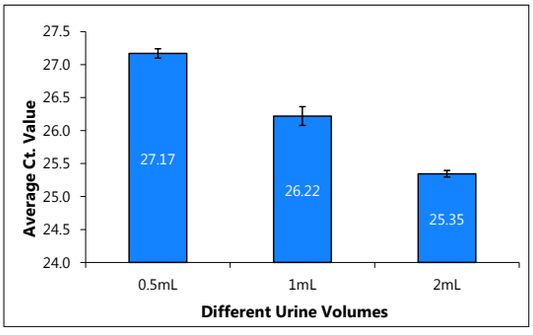

Figure 1. Purification of cell-free circulating DNA from different urine volumes. Norgen's Urine Cell-Free Circulating DNA Purification Mini Kit was used to purify circulating DNA from 500 µL, 1 mL and 2 mL fresh urine. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the relative amount of the purified housekeeping 5S rRNA gene. The relative amount of the 5S rRNA gene is linearly increasing with increasing the sample input volume. Norgen's kit showed consistent and high recovery of the housekeeping 5S rRNA gene.

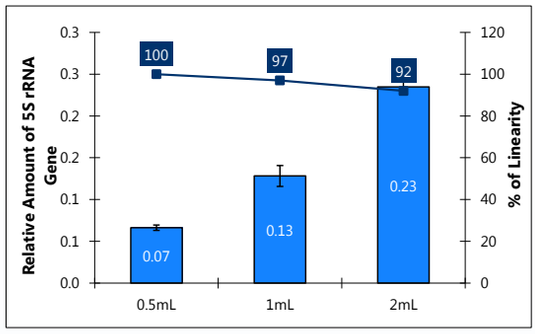

Figure 2. Linearity of DNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating DNA Purification Mini Kit was used to purify circulating DNA from 500 µL, 1 mL and 2 mL fresh urine. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the linearity of the purified housekeeping 5S rRNA gene from the different urine volumes. Norgen's Urine Cell-Free Circulating DNA Purification Mini Kit was able to recover 97% of the 5S rRNA gene from 1 mL urine relative to the amount that is present in 500 µL urine. Moreover, 92% of the 5S rRNA gene was recovered from 2 mL urine relative to the amount that is present in 1 mL urine.

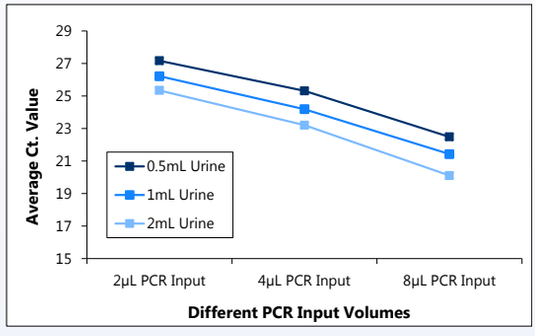

Figure 3. Determination of the amount of inhibition present in urine cell-free circulating DNA samples when detecting the human 5S gene. DNA was isolated from 500 µL, 1 mL and 2 mL urine using Norgen's Urine Cell-Free Circulating DNA Purification Mini Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR. In fact the Ct values tend to decrease with increasing the PCR input volume, indicating that DNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

Feature	Specifications
Minimum Urine Input	250 µL
Maximum Urine Input	2 mL
Elution Volume	50-100 µL
Time to Complete Purifications	15-20 minutes
Size of Purified DNA	All sizes of DNA ≥ 50 bp
Average Yield	Variable depending on specimen

Urine Cell-Free Circulating DNA Purification Midi Kit — Cat. # 56700

Rapid and simple isolation of cell-free circulating DNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA as well as viral DNA from fresh, preserved or frozen urine samples from volumes ranging from 2 mL to 10 mL.

The first column will handle the large volume input of urine that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification are provided in one convenient and fast kit for the easy processing of small input volumes of bodily fluids.

The purified urine DNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive PCR and Southern Blot analysis, Microarrays and NGS

Features and Benefits

- Isolate all sizes of circulating DNA from fresh, preserved or frozen urine samples
- Isolate viral DNA
- Versatile urine input volumes (2 mL - 10 mL)
- Concentrate circulating DNA into a flexible elution volume ranging from (50 µL - 100 µL)
- Isolate inhibitor-free cell-free circulating DNA
- Purify high-quality DNA in 40-45 minutes
- Compatible with Norgen's Urine Preservative and other commercially available urine preservatives

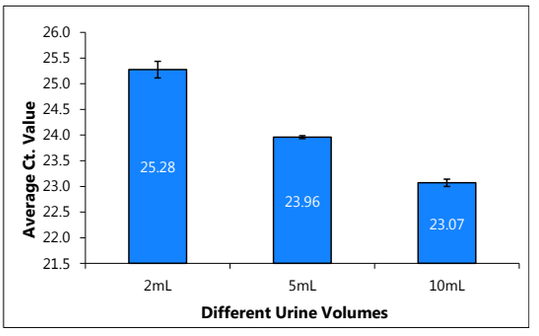

Figure 1. Purification of cell-free circulating DNA from different urine volumes. Norgen's Urine Cell-Free Circulating DNA Purification Midi Kit was used to purify circulating DNA from 2 mL, 5 mL and 10 mL fresh urine. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the relative amount of the purified housekeeping 5S rRNA gene. The relative amount of the 5S rRNA gene is linearly increasing with increasing the sample input volume. Norgen's kit showed consistent and high recovery of the housekeeping 5S rRNA gene.

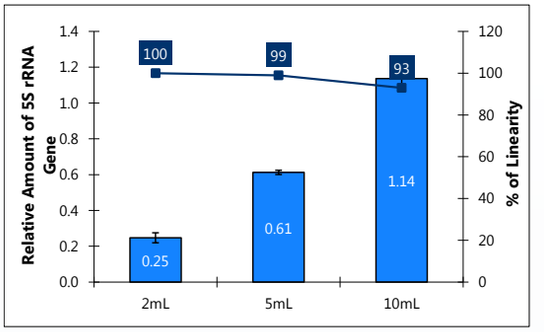

Figure 2. Linearity of DNA purified from increasing urine volume. Norgen's Urine Cell-Free Circulating DNA Purification Midi Kit was used to purify circulating DNA from 2 mL, 5 mL and 10 mL fresh urine. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the linearity of the purified housekeeping 5S rRNA gene from the different urine volumes. Norgen's Urine Cell-Free Circulating DNA Purification Midi Kit was able to recover 99% of the 5S rRNA gene from 5 mL urine relative to the amount that is present in 1 mL Urine. Moreover, 93% of the 5S rRNA gene was recovered from 10 mL urine relative to the amount that is present in 5 mL urine.

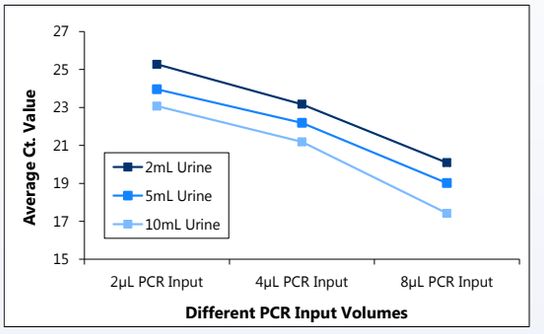

Figure 3. Determination of the amount of inhibition present in urine cell-free circulating DNA samples when detecting the human 5S gene. DNA was isolated from 2 mL, 5 mL and 10 mL urine using Norgen's Urine Cell-Free Circulating DNA Purification Midi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR, and in fact the Ct values tend to decrease with increasing the PCR input volume indicating that DNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

Feature	Specifications
Minimum Urine Input	2 mL
Maximum Urine Input	10 mL
Elution Volume	50-100 µL
Time to Complete Purifications	40-45 minutes
Size of Purified DNA	All sizes of DNA ≥ 50 bp
Average Yield	Variable depending on specimen

Urine Cell-Free Circulating DNA Purification Maxi Kit — Cat. # 56800

Rapid and simple isolation of cell-free circulating DNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA as well as viral DNA from fresh, preserved or frozen urine samples from volumes ranging from 10 mL to 30 mL.

The first column will handle the large volume input of urine that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification are provided in one convenient and fast kit for the easy processing of small input volumes of bodily fluids.

The purified urine DNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive PCR and Southern Blot analysis, Microarrays and NGS.

Features and Benefits

- Isolate all sizes of circulating DNA from fresh, preserved or frozen urine samples
- Isolate viral DNA
- Versatile urine input volumes (10 mL - 30 mL)
- Concentrate circulating DNA into a flexible elution volume ranging from (50 µL - 100 µL)
- Isolate inhibitor-free cell-free circulating DNA
- Purify high-quality DNA in 40-45 minutes
- Compatible with Norgen's Urine Preservative and other commercially available urine preservatives

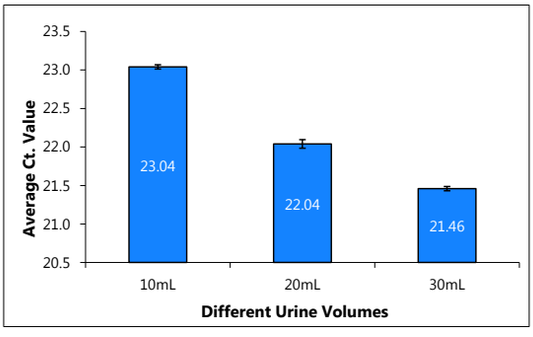

Figure 1. Purification of cell-free circulating DNA from different urine volumes. Norgen's Urine Cell-Free Circulating DNA Purification Maxi Kit was used to purify circulating DNA from 10 mL, 20 mL and 30 mL fresh urine. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the relative amount of the purified housekeeping 5S rRNA gene. The relative amount of the 5S rRNA gene is linearly increasing with increasing the sample input volume. Norgen's kit showed the consistent and high recovery of the housekeeping 5S rRNA gene.

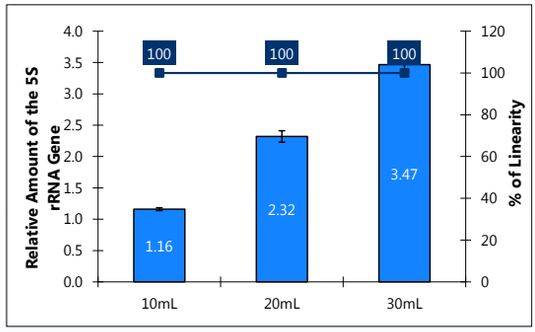

Figure 2. Linearity of DNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating DNA Purification Maxi Kit was used to purify circulating DNA from 10 mL, 20 mL and 30 mL fresh urine. Two microlitres of the purified DNA was then used as the template in qPCR reactions to assess the linearity of the purified the housekeeping 5S rRNA gene from the different urine volumes. Norgen's Urine Cell-Free Circulating DNA Purification Maxi Kit was able to recover 100% of the 5S rRNA gene from 20 mL urine relative to the amount that is present in 10 mL urine. Moreover, 100% of the 5S rRNA gene was recovered from 30 mL urine relative to the amount that is present in 20 mL urine.

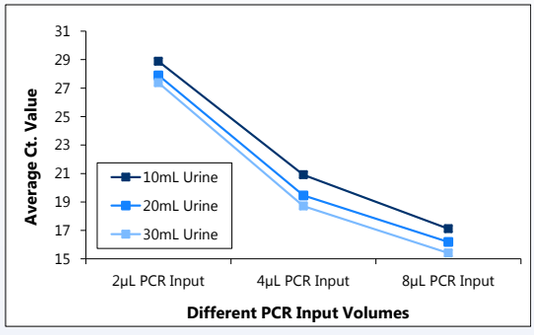

Figure 3. Determination of the amount of inhibition present in urine cell-free circulating DNA samples when detecting the human 5S gene. DNA was isolated from 10 mL, 20 mL and 30 mL urine using Norgen's Urine Cell-Free Circulating DNA Purification Maxi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR. In fact the Ct values tend to decrease with increasing the PCR input volume, indicating that DNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

Feature	Specifications
Minimum Urine Input	10 mL
Maximum Urine Input	30 mL
Elution Volume	50-100 µL
Time to Complete Purifications	15-20 minutes
Size of Purified DNA	All sizes of DNA ≥ 50 bp
Average Yield	Variable depending on specimen

Cell-Free Circulating RNA Purification Kits

Plasma/Serum RNA Purification Mini Kit — Cat. # 55000

Rapid and simple isolation of cell-free circulating and exosomal RNA from plasma/serum samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating and exosomal RNA using a convenient spin column method. This kit can purify RNA from fresh or frozen serum or plasma samples prepared from blood collected on either EDTA or Citrate, from volumes ranging from 50 µL to 200 µL. Plasma samples prepared from blood collected on heparin should not be used, as heparin can significantly interfere with many downstream applications such as RT-PCR.

The purified plasma/serum RNA is eluted in a flexible final volume of 10 µL to 25 µL and is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating and exosomal RNA, including microRNA
- Versatile plasma/serum input ranging from 50 µL to 200 µL
- No phenol extractions nor carrier RNA
- Bind and elute all RNA irrespective of size or GC content, without bias
- Concentrate circulating RNA and exosomal RNA into a flexible elution volume ranging from 10 µL to 25 µL
- Purify high-quality RNA in 15-20 minutes

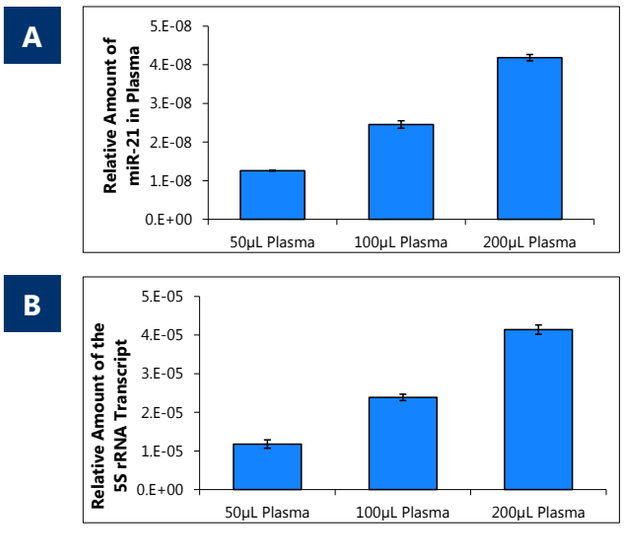

Figure 1. Purification of circulating RNA from different plasma volumes. Norgen's Plasma/Serum RNA Purification Mini Kit was used to purify circulating RNA from 50 µL, 100 µL and 200 µL plasma prepared from blood collected on EDTA. Three microlitres of the purified RNA was then used as the template in 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.

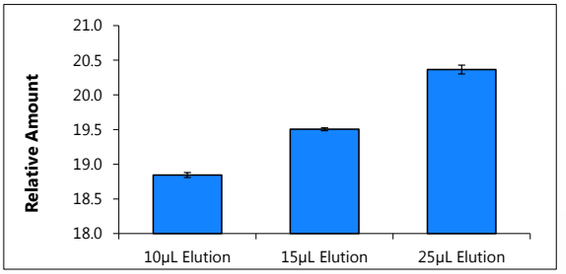

Figure 2. Eluting purified circulating RNA into different elution volumes. Norgen's Plasma/Serum RNA Purification Mini Kit was used to purify circulating RNA from 200 µL plasma prepared from blood collected on EDTA and eluted in 10 µL, 15 µL, and 25 µL. Three microlitres of the purified RNA was then used as the template in RT-qPCR reactions to detect miR-21. The relative amount of miR-21 is increasing with increasing the elution volume indicating the efficient concentration of the plasma circulating RNA in a very low elution volume.

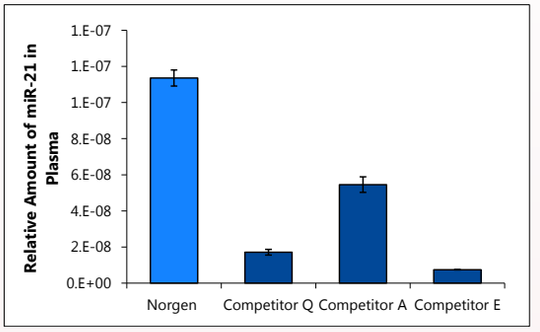

Figure 3. Effective and consistent detection of miRNA from plasma. Norgen's Plasma/Serum RNA Purification Mini Kit can effectively isolate miRNA from plasma. Circulating miRNA was isolated from 200 µL plasma using Norgen's Plasma/Serum RNA Purification Mini Kit, competitor Q's kit and competitor E's 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 RNA purified using Norgen's 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 Mini 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 200 µL plasma using Norgen's kit was higher than that recovered from RNA purified from 600 µL using competitor A's kit.

Feature	Specifications
Minimum Plasma/Serum Input	50 µL
Maximum Plasma/Serum Input	200 µL
Elution Volume	10-25 µL
Time to Complete Purifications	15-20 minutes
Size of Purified RNA	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Plasma/Serum RNA Purification Midi Kit — Cat. # 56100

Rapid and simple isolation of cell-free circulating and exosomal RNA from plasma/serum samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating and exosomal RNA using a two column method. This kit can purify RNA from fresh or frozen serum or plasma samples prepared from blood collected on either EDTA or Citrate, from volumes ranging from 250 µL to 1.5 mL. Plasma samples prepared from blood collected on heparin should not be used, as heparin can significantly interfere with many downstream applications such as RT-PCR.

The first column will handle the large volume input of bodily fluids that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification and concentration are provided in one convenient and fast kit for the easy processing of large input volumes of bodily fluids.

The purified plasma/serum RNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating and exosomal RNA, including microRNA
- Versatile plasma/serum input ranging from 250 µL to 1.5 mL
- No phenol extractions nor carrier RNA
- Bind and elute all RNA irrespective of size or GC content, without bias
- Concentrate circulating RNA and exosomal RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA in 35-40 minutes

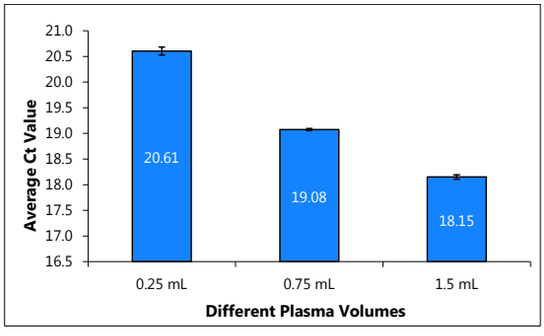

Figure 1. Purification of cell-free circulating RNA and exosomal RNA from different plasma volumes. Norgen's Plasma/Serum RNA Purification Midi Kit was used to purify cell-free circulating and exosomal RNA from 0.25 mL, 0.75 mL and 1.5 mL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the amplification of the housekeeping 5S rRNA transcript. The average Ct value for the 5S rRNA transcript is linearly decreasing with increasing the sample input volume.

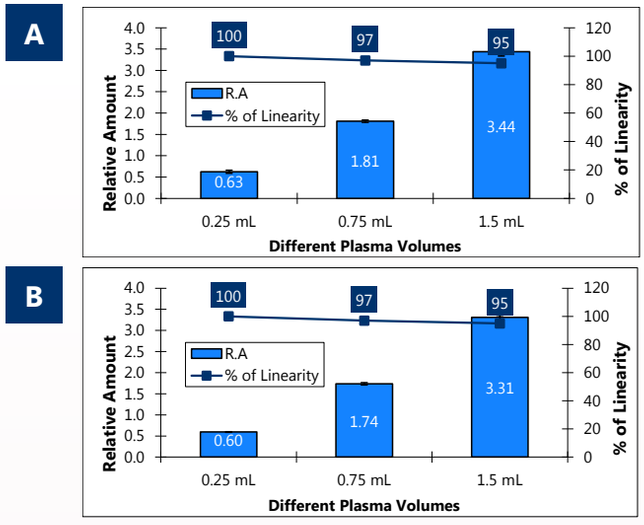

Figure 2. Linearity of RNA purified from increasing plasma volumes using Norgen's Plasma/Serum RNA Purification Midi Kit. Norgen's Plasma/Serum RNA Purification Midi Kit was used to purify RNA from 0.25 mL, 0.7 mL and 1.5 mL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of (A) the housekeeping 5S rRNA transcript and (B) miR-21 from the different plasma volumes. Norgen's Plasma/Serum RNA Purification Midi Kit was able to recover 97% of both the 5S rRNA transcript and the miR-21 transcript from 0.75 mL plasma relative to the amount that is present in 0.35 mL plasma. Moreover, 95% of the 5S rRNA transcript and the miR-21 was recovered from 1.5 mL plasma relative to the amount that is present in 0.75 mL plasma.

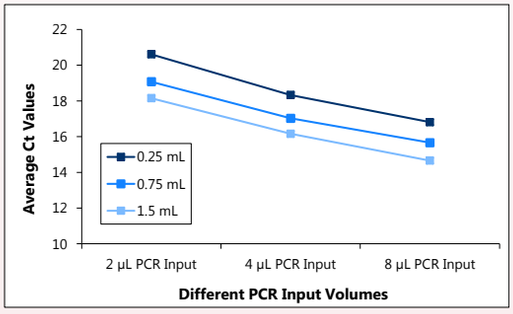

Figure 3. Determination of the amount of inhibition present in plasma RNA samples when detecting the human 5S transcript. RNA was isolated from 0.25 mL, 0.75 mL and 1.5 mL plasma using Norgen's Midi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL reverse transcription reaction followed by qPCR amplification reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in the PCR input volume used as a template in the reverse transcription reaction did not affect the Ct value generated from the qPCR amplification for the 5S rRNA transcript. In fact the Ct values tend to decrease with increasing the PCR input volume indicating that RNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

Feature	Specifications
Minimum Plasma/Serum Input	250 µL
Maximum Plasma/Serum Input	1.5 mL
Elution Volume	50-100 µL
Time to Complete Purifications	35-40 minutes
Size of Purified RNA	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Cell-Free Circulating RNA Purification Kits

Plasma/Serum RNA Purification Maxi Kit — Cat. # 56200

Rapid and simple isolation of cell-free circulating and exosomal RNA from plasma/serum samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating and exosomal RNA using a two column method. This kit can purify RNA from fresh or frozen serum or plasma samples prepared from blood collected on either EDTA or Citrate, from volumes ranging from 2 mL to 5 mL. Plasma samples prepared from blood collected on heparin should not be used, as heparin can significantly interfere with many downstream applications such as RT-PCR.

The first column will handle the large volume input of bodily fluids that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification and concentration are provided in one convenient and fast kit for the easy processing of large input volumes of bodily fluids.

The purified plasma/serum RNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating and exosomal RNA, including microRNA irrespective of size or GC content, without bias
- Versatile plasma/serum input ranging from 2 mL to 5 mL
- No phenol extractions nor carrier RNA
- Concentrate circulating RNA and exosomal RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA in 35-40 minutes
- *Formerly Cat. 30000*

Feature	Specifications
Minimum Plasma/Serum Input	2 mL
Maximum Plasma/Serum Input	5 mL
Elution Volume	50-100 µL
Time to Complete Purifications	35-40 minutes
Size of Purified RNA	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

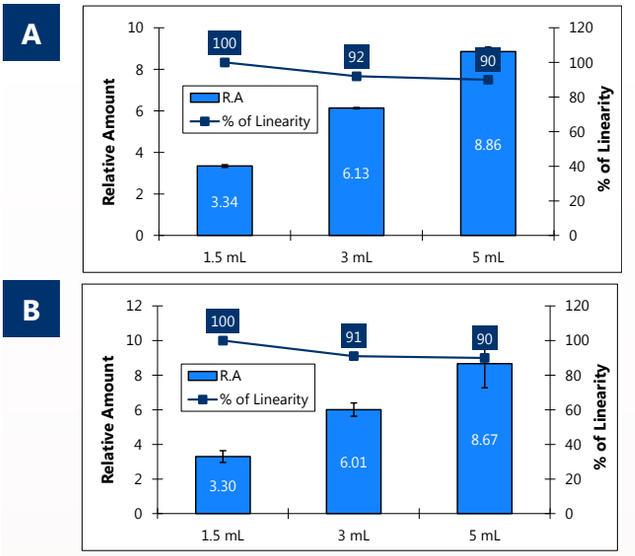

Figure 1. Linearity of RNA purified from increasing plasma volumes using Norgen's Plasma/Serum RNA Purification Maxi Kit. Norgen's Plasma/Serum RNA Purification Maxi Kit was used to purify RNA from 1.5 mL, 3 mL and 5 mL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of (A) the housekeeping 5S rRNA transcript and (B) miR-21 from the different plasma volumes. Norgen's Plasma/Serum RNA Purification Maxi Kit was able to recover 92% of the 5S rRNA transcript from 3 mL plasma relative to the amount that is present in 1.5 mL plasma. Moreover, 90% of the 5S rRNA transcript was recovered from 5 mL plasma relative to the amount that is present in 3 mL plasma. As for miR-21, Norgen's Plasma/Serum RNA Purification Maxi Kit was able to recover 91% of miR-21 from 3 mL plasma relative to the amount that is present in 1.5 mL plasma. Furthermore, 90% of miR-21 was recovered from 5 mL plasma relative to the amount that is present in 3 mL plasma.

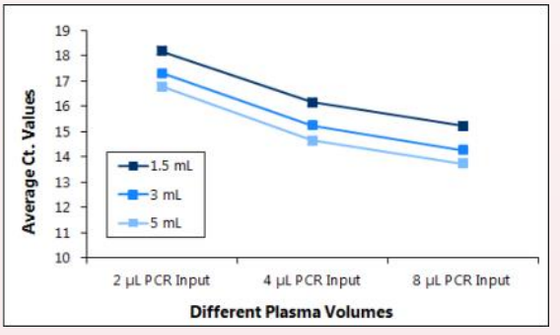

Figure 2. Determination of the amount of inhibition present in plasma RNA samples when detecting the human 5S transcript. RNA was isolated from 1.5 mL, 3 mL and 5 mL plasma using Norgen's Plasma/Serum RNA Purification Maxi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL reverse transcription reaction followed by qPCR amplification reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in the PCR input volume used as a template in the reverse transcription reaction did not affect the Ct value generated from the qPCR amplification for the 5S rRNA transcript. In fact the Ct values tend to decrease with increasing the PCR input volume indicating that RNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

Urine Cell-Free Circulating RNA Purification Mini Kit — Cat. # 56900

Rapid and simple isolation of cell-free circulating and exosomal RNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating RNA, including exosomal RNA as well as viral RNA from fresh, preserved or frozen urine samples from volumes ranging from 250 µL to 2 mL. All components for the purification are provided in one convenient and fast kit for the easy processing of small input volumes of bodily fluids. The purified urine RNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating and exosomal RNA, including microRNA irrespective of size or GC content, without bias
- Versatile urine input ranging from 250 µL to 2 mL
- No phenol extractions nor carrier RNA
- Concentrate circulating RNA and exosomal RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA in 25 - 30 minutes

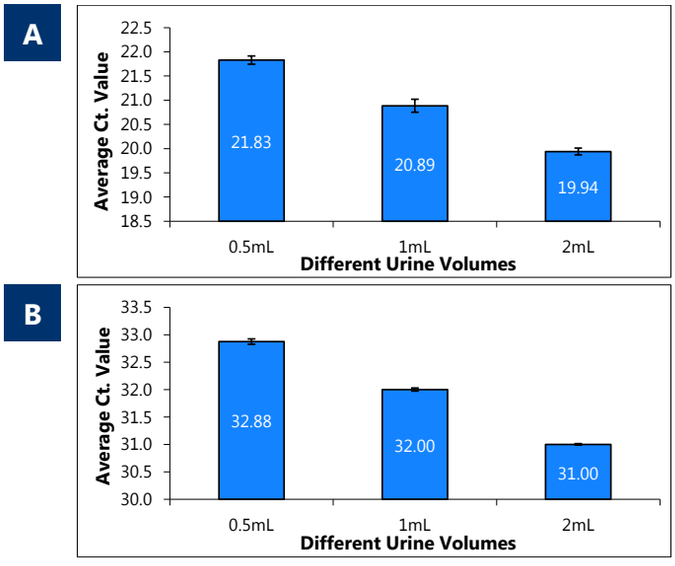

Figure 1. Purification of cell-free circulating RNA and exosomal RNA from different urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Mini Kit was used to purify cell-free circulating and exosomal RNA from 0.5 mL, 1 mL and 2 mL urine samples. Two microlilitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the amplification of (A) the housekeeping 5S rRNA transcript and (B) miR-21. The average Ct value for both (A) 5S rRNA transcript and (B) miR-21 is linearly decreasing with increasing the sample input volume.

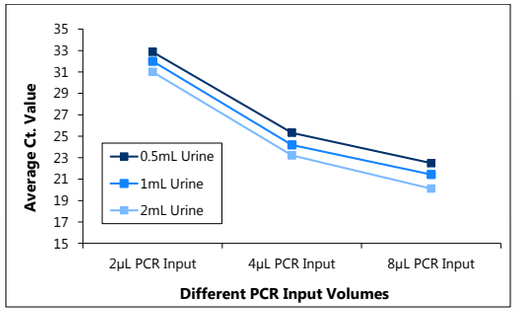

Figure 2. Determination of the amount of inhibition present in urine cell-free circulating RNA samples when detecting the human miR-21. RNA was isolated from 0.5 mL, 1 mL and 2 mL urine using Norgen's Urine Cell-Free Circulating RNA Purification Mini Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR and in fact the Ct values tend to decrease with increasing the PCR input volume, indicating that RNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

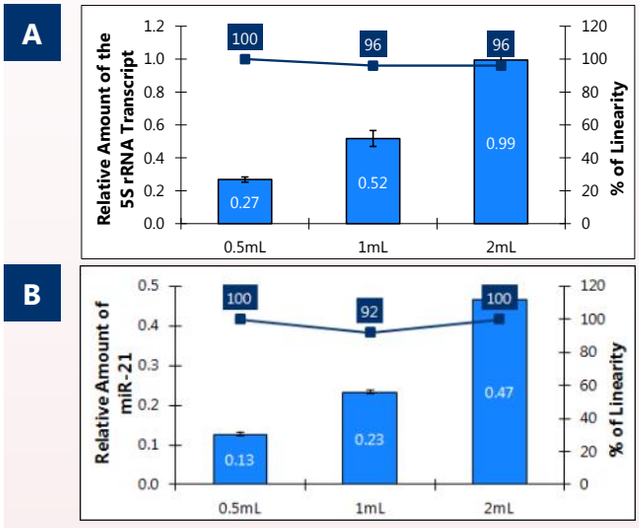

Figure 3. Linearity of RNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Mini Kit was used to purify RNA from 0.5 mL, 1 mL and 2 mL urine samples. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the (A) 5S rRNA transcript and (B) miR-21 from the different urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Mini Kit was able to recover 96% of the 5S rRNA transcript from 1 mL urine relative to the amount that is present in 0.5 mL plasma. Moreover, 96% of the 5S rRNA transcript was recovered from 2 mL urine relative to the amount that is present in 1 mL urine. As for miR-21, Norgen's Urine Cell-Free Circulating RNA Purification Mini Kit was able to recover 92% of miR-21 from 1 mL urine relative to the amount that is present in 0.5 mL urine. Furthermore, 100% of miR-21 was recovered from 2 mL urine relative to the amount that is present in 1 mL urine.

Feature	Specifications
Minimum Urine Input	250 µL
Maximum Urine Input	2 mL
Elution Volume	50-100 µL
Time to Complete Purifications	25-30 minutes
Size of Purified RNA	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Urine Cell-Free Circulating RNA Purification Midi Kit — Cat. # 57000

Rapid and simple isolation of cell-free circulating and exosomal RNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating RNA, including exosomal RNA as well as viral RNA from fresh, preserved or frozen urine samples from volumes ranging from 2 mL to 10 mL. The first column will handle the large volume input of urine that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification are provided in one convenient and fast kit for the easy processing of small input volumes of bodily fluids.

The purified urine RNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating and exosomal RNA, including microRNA irrespective of size or GC content, without bias
- Versatile urine input ranging from 2 mL to 10 mL
- No phenol extractions nor carrier RNA
- Concentrate circulating RNA and exosomal RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA in 40 - 45 minutes

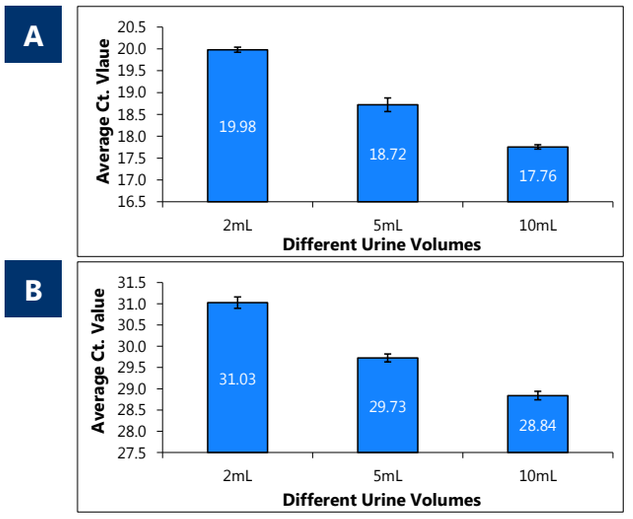

Figure 1. Purification of cell-free circulating RNA and exosomal RNA from different urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Midi Kit was used to purify cell-free circulating and exosomal RNA from 2 mL, 5 mL and 10 mL urine samples. Two microlilitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the amplification of (A) the housekeeping 5S rRNA transcript and (B) miR-21. The average Ct value for both (A) 5S rRNA transcript and (B) miR-21 is linearly decreasing with increasing the sample input volume.

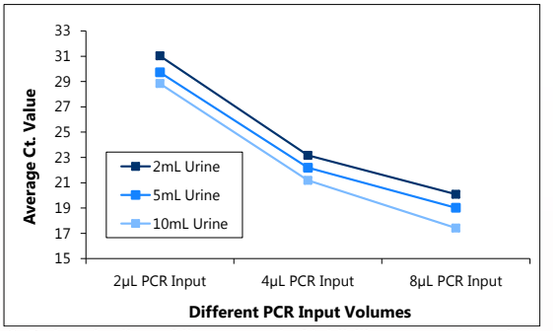

Figure 2. Determination of the amount of inhibition present in urine cell-free circulating RNA samples when detecting the human miR-21. RNA was isolated from 2 mL, 5 mL and 10 mL urine using Norgen's Urine Cell-Free Circulating RNA Purification Midi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR and in fact the Ct values tend to decrease with increasing the PCR input volume indicating that RNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

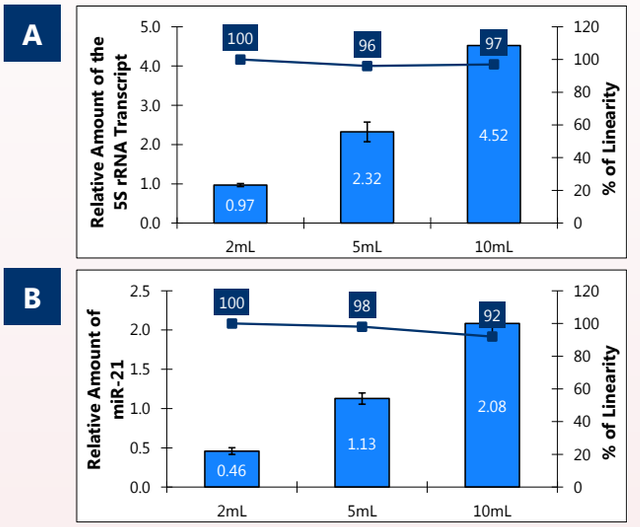

Figure 3. Linearity of RNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Midi Kit was used to purify RNA from 2 mL, 5 mL and 10 mL urine samples. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the (A) 5S rRNA transcript and (B) miR-21 from the different urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Midi Kit was able to recover 96% of the 5S rRNA transcript from 5 mL urine relative to the amount that is present in 2 mL plasma. Moreover, 97% of the 5S rRNA transcript was recovered from 10 mL urine relative to the amount that is present in 5 mL urine. As for miR-21, Norgen's Urine Cell-Free Circulating RNA Purification Midi Kit was able to recover 98% of miR-21 from 5 mL urine relative to the amount that is present in 1 mL urine. Furthermore, 92% of miR -21 was recovered from 10 mL urine relative to the amount that is present in 5 mL urine.

Feature	Specifications
Minimum Urine Input	2 mL
Maximum Urine Input	10 mL
Elution Volume	50-100 µL
Time to Complete Purifications	40-45 minutes
Size of Purified RNA	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Urine Cell-Free Circulating RNA Purification Maxi Kit — Cat. # 57100

Rapid and simple isolation of cell-free circulating and exosomal RNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating RNA, including exosomal RNA as well as viral RNA from fresh, preserved or frozen urine samples from volumes ranging from 10 mL to 30 mL. The first column will handle the large volume input of urine that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification are provided in one convenient and fast kit for the easy processing of small input volumes of bodily fluids.

The purified urine RNA is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating and exosomal RNA, including microRNA irrespective of size or GC content, without bias
- Versatile urine input ranging from 2 mL to 10 mL
- No phenol extractions nor carrier RNA
- Concentrate circulating RNA and exosomal RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA in 40 - 45 minutes

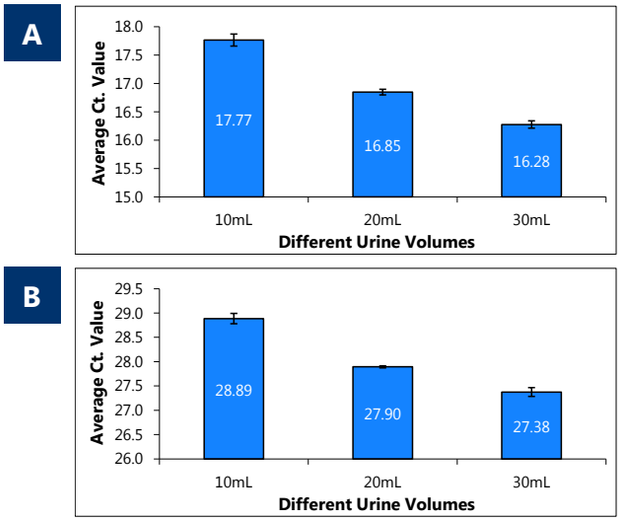

Figure 1. Purification of cell-free circulating RNA and exosomal RNA from different urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Maxi Kit was used to purify cell-free circulating and exosomal RNA from 10 mL, 20 mL and 30 mL urine samples. Two microlilitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the amplification of (A) the housekeeping 5S rRNA transcript and (B) miR-21. The average Ct value for both (A) 5S rRNA transcript and (B) miR-21 is linearly decreasing with increasing the sample input volume.

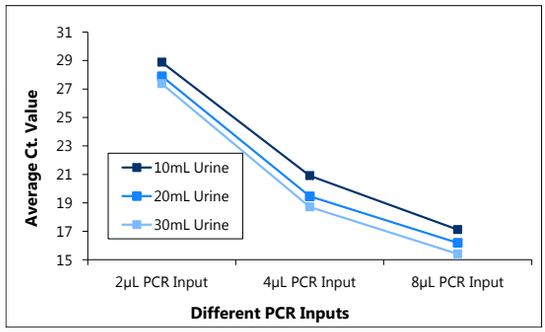

Figure 2. Determination of the amount of inhibition present in urine cell-free circulating RNA samples when detecting the human miR-21. RNA was isolated from 10 mL, 20 mL and 30 mL urine using Norgen's Urine Cell-Free Circulating RNA Purification Maxi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL qPCR reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in elution volume used as a template in the qPCR did not affect the Ct value generated from qPCR and in fact the Ct values tend to decrease with increasing the PCR input volume, indicating that RNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

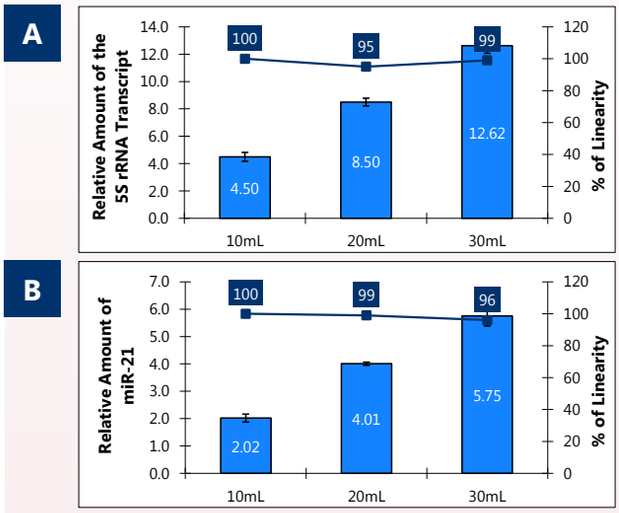

Figure 3. Linearity of RNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Maxi Kit was used to purify RNA from 10 mL, 20 mL and 30 mL urine samples. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the (A) 5S rRNA transcript and (B) miR-21 from the different urine volumes. Norgen's Urine Cell-Free Circulating RNA Purification Maxi Kit was able to recover 95% of the 5S rRNA transcript from 20 mL urine relative to the amount that is present in 10 mL urine. Moreover, 99% of the 5S rRNA transcript was recovered from 30 mL urine relative to the amount that is present in 20 mL urine. As for miR-21, Norgen's Urine Cell-Free Circulating RNA Purification Maxi Kit was able to recover 99% of miR-21 from 20 mL urine relative to the amount that is present in 10 mL urine. Furthermore, 96% of miR-21 was recovered from 30 mL urine relative to the amount that is present in 20 mL urine.

Feature	Specifications
Minimum Urine Input	10 mL
Maximum Urine Input	30 mL
Elution Volume	50-100 µL
Time to Complete Purifications	40-45 minutes
Size of Purified RNA	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Total Nucleic Acid Purification Kits

Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit

Cat. # 56300

Rapid and simple isolation of cell-free circulating DNA, RNA and exosomal RNA from plasma/serum samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA/RNA including exosomal RNA, as well as viral DNA/RNA from fresh or frozen serum or plasma samples prepared from blood collected on either EDTA or Citrate from volumes ranging from 50 µL to 200 µL. Plasma samples prepared from blood collected on heparin should not be used as heparin can significantly interfere with many downstream applications such as RT-PCR. All components for the purification are provided in one convenient fast kit for the easy processing of small input volumes of bodily fluids.

The purified plasma/serum circulating and viral nucleic acid is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, methylation-sensitive PCR and Southern Blot analysis, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating DNA, circulating and exosomal RNA, including microRNA, viral DNA/RNA in one elution
- Versatile plasma/serum input ranging from 50 µL to 200 µL
- No phenol extractions nor carrier RNA
- Bind and elute all RNA irrespective of size or GC content, without bias
- Concentrate cell-free circulating nucleic acid, viral DNA and RNA into a flexible elution volume ranging from 10 µL to 25 µL
- Purify high-quality RNA/DNA in 15 - 20 minutes
- Compatible with Streck Cell-Free DNA BCT® Tubes

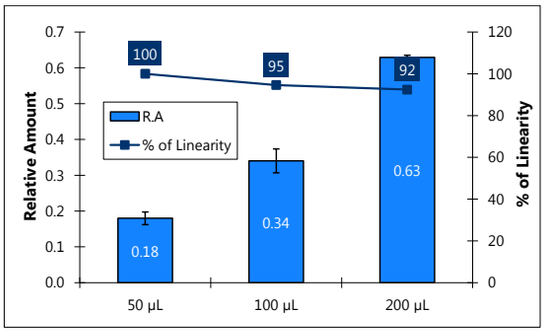

Figure 1. Linearity of RNA purified from increasing plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit was used to purify RNA from 50 µL, 100 µL and 200 µL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the purified miR-21 from the different plasma volumes. Norgen's Mini Kit was able to recover 95% of miR -21 from 100 µL plasma relative to the amount that is present in 50 µL plasma. Moreover, 92% of the miR-21 was recovered from 200 µL plasma relative to the amount that is present in 100 µL plasma.

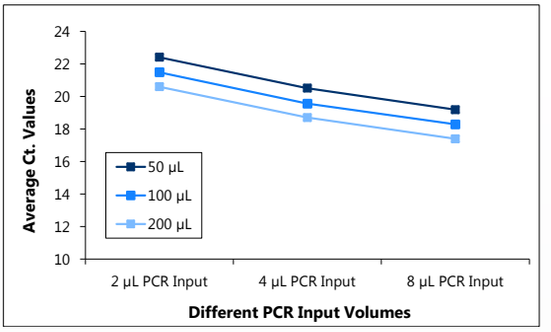

Figure 2. Determination of the amount of inhibition present in plasma RNA samples when detecting the miR-21. RNA was isolated from 50 µL, 100 µL and 200 µL plasma using Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL reverse transcription reaction followed by qPCR amplification reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in the PCR input volume used as a template in the reverse transcription reaction did not affect the Ct value generated from the qPCR amplification for miR-21. In fact the Ct values tend to decrease with increasing the PCR input volume indicating that RNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

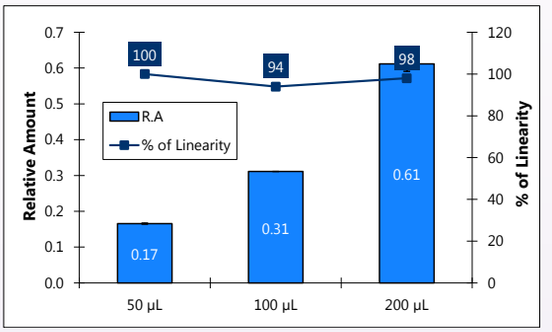

Figure 3. Linearity of DNA purified from increasing plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit was used to purify circulating NA from 50 µL, 100 µL and 200 µL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified NA was then used as the template in qPCR reactions to assess the linearity of the purified the housekeeping 5S rRNA gene from the different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit was able to recover ninety-four percent of the 5S rRNA gene from 100 µL plasma relative to the amount that is present in 50 µL plasma. Moreover, 98% of the 5S rRNA gene was recovered from 200 µL plasma relative to the amount that is present in 100 µL plasma

Feature	Specifications
Minimum Plasma/Serum Input	50 µL
Maximum Plasma/Serum Input	200 µL
Elution Volume	10-25 µL
Time to Complete Purifications	15-20 minutes
Size of Nucleic Acid Purified	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit

Cat. # 56400

Rapid and simple isolation of cell-free circulating DNA, RNA and exosomal RNA from plasma/serum samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA/RNA including exosomal RNA as well as viral DNA/RNA from fresh or frozen serum or plasma samples prepared from blood collected on either EDTA or Citrate from volumes ranging from 250 µL to 1.5 mL. Plasma samples prepared from blood collected on heparin should not be used as heparin can significantly interfere with many downstream applications such as RT-PCR.

The first column will handle the large volume input of bodily fluids that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification are provided in one convenient and fast kit.

The purified plasma/serum circulating and viral nucleic acid is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, methylation-sensitive PCR and Southern Blot analysis, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating DNA, circulating and exosomal RNA, including microRNA, viral DNA/RNA in one elution
- Versatile plasma/serum input ranging from 250 µL to 1.5 mL
- No phenol extractions nor carrier RNA
- Bind and elute all RNA irrespective of size or GC content, without bias
- Concentrate cell-free circulating nucleic acid, viral DNA and RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA/DNA in 35 - 40 minutes
- Compatible with Streck Cell-Free DNA BCT® Tubes

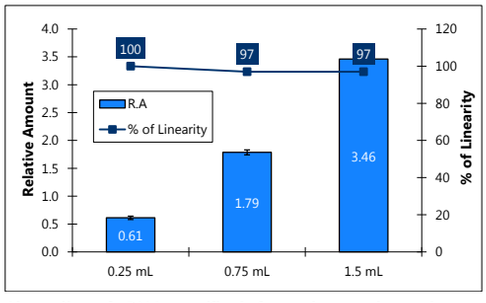

Figure 1. Linearity of RNA purified from increasing plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit was used to purify RNA from 250 µL, 750 µL and 1.5 mL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the purified miR-21 from the different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit was able to recover 97% of miR-21 from 750 µL plasma relative to the amount that is present in 250 µL plasma. Moreover, 97% of the miR-21 was recovered from 1.5 mL plasma relative to the amount that is present in 750 µL plasma.

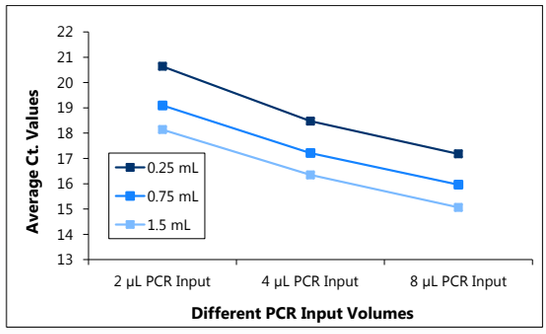

Figure 2. Determination of the amount of inhibition present in plasma RNA samples when detecting the miR-21. RNA was isolated from 250 µL, 750 µL and 1.5 mL plasma using Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL reverse transcription reaction followed by qPCR amplification reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in the PCR input volume used as a template in the reverse transcription reaction did not affect the Ct value generated from the qPCR amplification for miR-21. In fact the Ct values tend to decrease with increasing the PCR input volume indicating that RNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

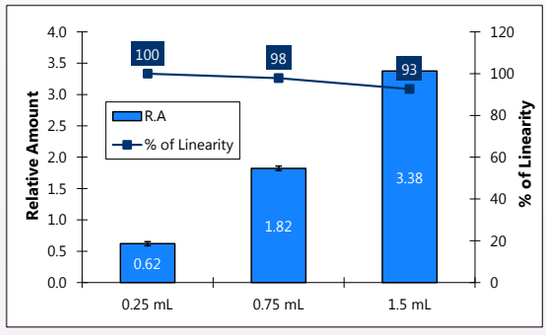

Figure 3. Linearity of DNA purified from increasing plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit was used to purify circulating NA from 250 µL, 750 µL and 1.5 mL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified NA was then used as the template in qPCR reactions to assess the linearity of the purified the housekeeping 5S rRNA gene from the different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit was able to recover 98% of the 5S rRNA gene from 750 µL plasma relative to the amount that is present in 250 µL plasma. Moreover, 93% of the 5S rRNA gene was recovered from 1.5 mL plasma relative to the amount that is present in 750 µL plasma

Feature	Specifications
Minimum Plasma/Serum Input	250 µL
Maximum Plasma/Serum Input	1.5 mL
Elution Volume	50-100 µL
Time to Complete Purifications	35-40 minutes
Size of Nucleic Acid Purified	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit

Cat. # 56500

Rapid and simple isolation of cell-free circulating DNA, RNA and exosomal RNA from plasma/serum samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA/RNA including exosomal RNA as well as viral DNA/RNA from fresh or frozen serum or plasma samples prepared from blood collected on either EDTA or Citrate from volumes ranging from 2 mL to 5 mL. Plasma samples prepared from blood collected on heparin should not be used as heparin can significantly interfere with many downstream applications such as RT-PCR

The first column will handle the large volume input of bodily fluids that is followed by a concentration on a mini column for a final elution of 50 µL to 100 µL. All components for the purification are provided in one convenient and fast kit.

The purified plasma/serum circulating and viral nucleic acid is fully compatible with all downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, methylation-sensitive PCR and Southern Blot analysis, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating DNA, circulating and exosomal RNA, including microRNA, viral DNA/RNA in one elution
- Versatile plasma/serum input ranging from 2 mL to 5 mL
- No phenol extractions nor carrier RNA
- Bind and elute all RNA irrespective of size or GC content, without bias
- Concentrate cell-free circulating nucleic acid, viral DNA and RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA/DNA in 35 - 40 minutes
- Compatible with Streck Cell-Free DNA BCT® Tubes

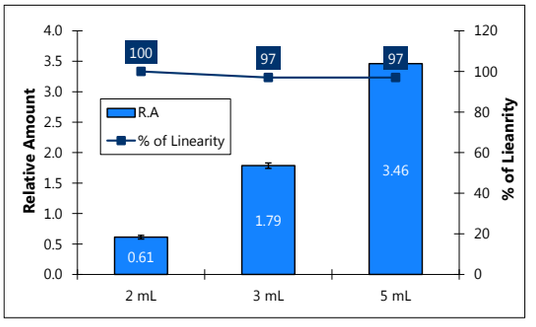

Figure 1. Linearity of RNA purified from increasing plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit was used to purify RNA from 2 mL, 3 mL and 5 mL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the purified miR-21 from the different plasma volumes. Norgen's Maxi Kit was able to recover 97% of miR-21 from 3 mL plasma relative to the amount that is present in 2 mL plasma. Moreover, 97% of the miR-21 was recovered from 5 mL plasma relative to the amount that is present in 3 mL plasma.

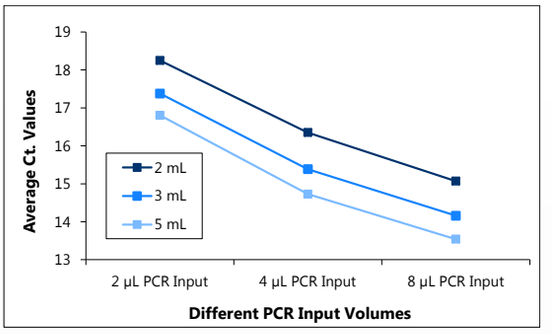

Figure 2. Determination of the amount of inhibition present in plasma RNA samples when detecting the miR-21. RNA was isolated from 2 mL, 3 mL and 5 mL plasma using Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL reverse transcription reaction followed by qPCR amplification reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in the PCR input volume used as a template in the reverse transcription reaction did not affect the Ct value generated from the qPCR amplification for miR-21. In fact the Ct values tend to decrease with increasing the PCR input volume indicating that RNA purified from plasma using Norgen's kit is free of the common inhibitors usually present in plasma.

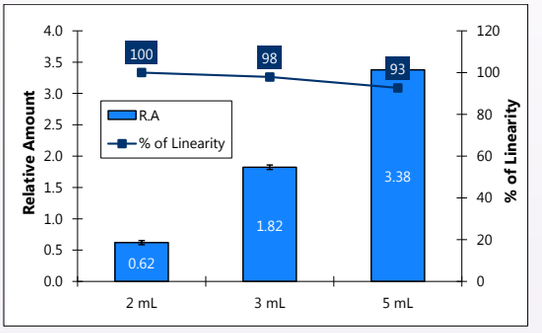

Figure 3. Linearity of DNA purified from increasing plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit was used to purify circulating NA from 2 mL, 3 mL and 5 mL plasma prepared from blood collected on citrate as an anticoagulant. Two microlitres of the purified NA was then used as the template in qPCR reactions to assess the linearity of the purified the housekeeping 5S rRNA gene from the different plasma volumes. Norgen's Plasma/Serum Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit was able to recover 98% of the 5S rRNA gene from 3 mL plasma relative to the amount that is present in 2 mL plasma. Moreover, 93% of the 5S rRNA gene was recovered from 5 mL plasma relative to the amount that is present in 3 mL plasma.

Feature	Specifications
Minimum Plasma/Serum Input	2 mL
Maximum Plasma/Serum Input	5 mL
Elution Volume	10-25 µL
Time to Complete Purifications	15-20 minutes
Size of Nucleic Acid Purified	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Urine Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit

Cat. # 59900

Rapid and simple isolation of cell-free circulating DNA, RNA and exosomal RNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA, circulating including exosomal RNA as well as viral DNA/RNA from fresh, frozen or preserved urine samples from volumes ranging from 250 µL to 2 mL.

Purification is based on spin column chromatography that uses Norgen's proprietary resin separation matrix. The kit is designed to isolate all sizes of cfc-DNA and circulating RNA, including microRNA, as well as all sizes of exosomal RNA. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Kits provides a clear advantage over other available kits in that they do not require phenol/chloroform or any protease treatments. Moreover, the kit allows the user to elute into a flexible elution volume ranging from 50 µL to 100 µL. The purified nucleic Acid is of the highest integrity, and can be used in a any downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, methylation-sensitive PCR and Southern Blot analysis, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating DNA, circulating and exosomal RNA, including microRNA, viral DNA/RNA in one elution
- Versatile plasma/serum input ranging from 250 µL to 2 mL
- No phenol extractions nor carrier RNA
- Bind and elute all RNA irrespective of size or GC content, without bias
- Concentrate cell-free circulating nucleic acid, viral DNA and RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA/DNA in 25 - 30 minutes
- Compatible with fresh, frozen or preserved urine sample

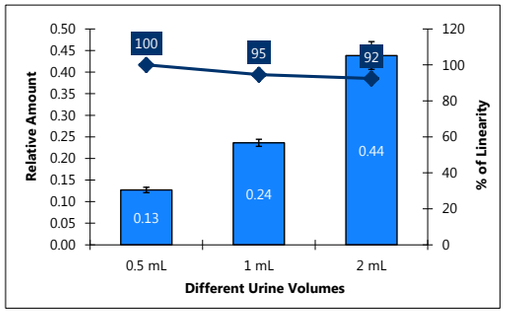

Figure 1. Linearity of RNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit was used to purify RNA from 500 µL, 1 mL and 2 mL urine. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the purified miR-21 from the different urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit was able to recover 95% of miR-21 from 1 mL urine relative to the amount that is present in 500 µL urine. Moreover, 92% of the miR-21 was recovered from 2 mL urine relative to the amount that is present in 1 mL urine.

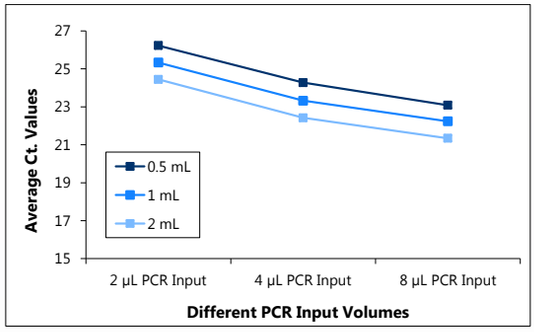

Figure 2. Determination of the amount of inhibition present in urine RNA samples when detecting miR-21. RNA was isolated from 500 µL, 1 mL and 2 mL urine using Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL reverse transcription reaction followed by qPCR amplification reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in the PCR input volume used as a template in the reverse transcription reaction did not affect the Ct value generated from the qPCR amplification for miR-21. In fact the Ct values tend to decrease with increasing the PCR input volume indicating that RNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

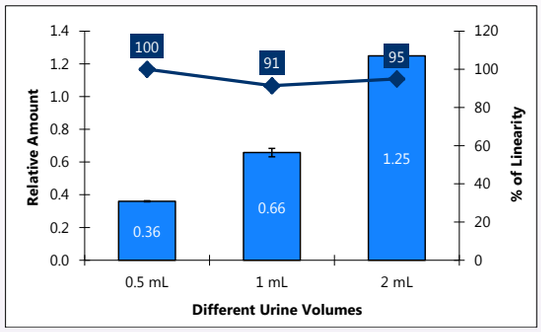

Figure 3. Linearity of DNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Mini Kit was used to purify circulating NA from 500 µL, 1 mL and 2 mL urine. Two microlitres of the purified NA was then used as the template in qPCR reactions to assess the linearity of the purified the housekeeping 5S rRNA gene from the different urine volumes. Norgen's Mini Kit was able to recover 91% of the 5S rRNA gene from 1 mL urine relative to the amount that is present in 500 µL urine. Moreover, 95% of the 5S rRNA gene was recovered from 2 mL urine relative to the amount that is present in 1 mL urine

Feature	Specifications
Minimum Urine Input	250 µL
Maximum Urine Input	1.5 mL
Elution Volume	50-100 µL
Time to Complete Purifications	25-30 minutes
Size of Nucleic Acid Purified	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Total Nucleic Acid Purification Kits

Urine Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit

Cat. # 60000

Rapid and simple isolation of cell-free circulating DNA, RNA and exosomal RNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA, circulating including exosomal RNA as well as viral DNA/RNA from fresh, frozen or preserved urine samples from volumes ranging from 2 mL to 10 mL.

Purification is based on spin column chromatography that uses Norgen's proprietary resin separation matrix. The kit is designed to isolate all sizes of cfc-DNA and circulating RNA, including microRNA, as well as all sizes of exosomal RNA. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Kits provides a clear advantage over other available kits in that they do not require phenol/chloroform or any protease treatments. Moreover, the kit allows the user to elute into a flexible elution volume ranging from 50 µL to 100 µL. The purified nucleic Acid is of the highest integrity, and can be used in a any downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, methylation-sensitive PCR and Southern Blot analysis, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating DNA, circulating and exosomal RNA, including microRNA, viral DNA/RNA in one elution
- Versatile urine input ranging from 2 mL to 10 mL
- No phenol extractions nor carrier RNA
- Bind and elute all RNA irrespective of size or GC content, without bias
- Concentrate cell-free circulating nucleic acid, viral DNA and RNA into a flexible elution volume ranging from 50 µL to 100 µL
- Purify high-quality RNA/DNA in 40 - 45 minutes
- Compatible with fresh, frozen or preserved urine sample

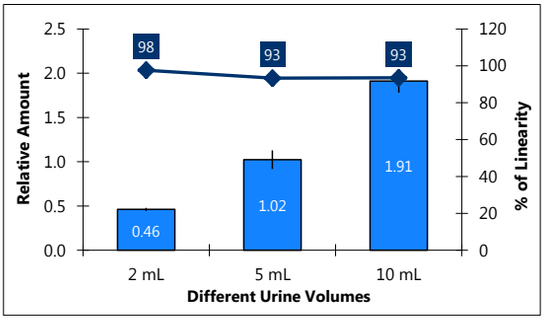

Figure 1. Linearity of RNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit was used to purify RNA from 2 mL, 5 mL and 10 mL urine. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the purified miR-21 from the different urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit was able to recover 93% of miR-21 from 5 mL urine relative to the amount that is present in 2 mL urine. Moreover, 93% of the miR-21 was recovered from 10 mL urine relative to the amount that is present in 5 mL urine.

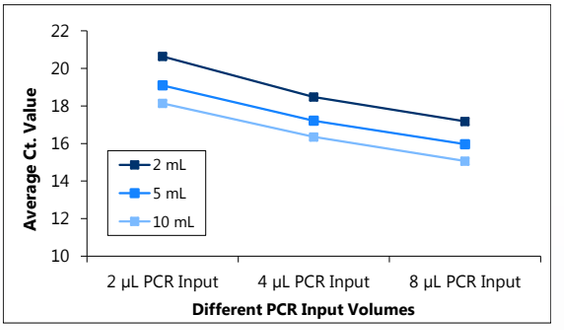

Figure 2. Determination of the amount of inhibition present in urine RNA samples when detecting miR-21. RNA was isolated from 2 mL, 5 mL and 10 mL urine using Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL reverse transcription reaction followed by qPCR amplification reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in the PCR input volume used as a template in the reverse transcription reaction did not affect the Ct value generated from the qPCR amplification for miR-21. In fact the Ct. values tend to decrease with increasing the PCR input volume indicating that RNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

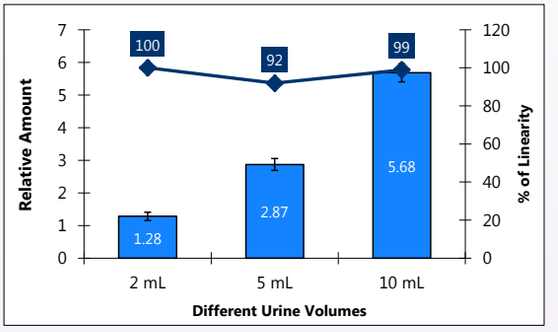

Figure 3. Linearity of DNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit was used to purify circulating NA from 2 mL, 5 mL and 10 mL urine. Two microlitres of the purified NA was then used as the template in qPCR reactions to assess the linearity of the purified the housekeeping 5S rRNA gene from the different urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Midi Kit was able to recover 92% of the 5S rRNA gene from 5 mL urine relative to the amount that is present in 2 mL urine. Moreover, 99% of the 5S rRNA gene was recovered from 10 mL urine relative to the amount that is present in 5 mL urine.

Feature	Specifications
Minimum Urine Input	2 mL
Maximum Urine Input	10 mL
Elution Volume	50-100 µL
Time to Complete Purifications	40-45 minutes
Size of Nucleic Acid Purified	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Urine Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit

Cat. # 60100

Rapid and simple isolation of cell-free circulating DNA, RNA and exosomal RNA from urine samples

This kit provides a fast, reliable and convenient method to purify and concentrate high quality, high purity and inhibitor-free cell-free circulating DNA, circulating including exosomal RNA as well as viral DNA/RNA from fresh, frozen or preserved urine samples from volumes ranging from 10 mL to 30 mL.

Purification is based on spin column chromatography that uses Norgen's proprietary resin separation matrix. The kit is designed to isolate all sizes of cfc-DNA and circulating RNA, including microRNA, as well as all sizes of exosomal RNA. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Kits provides a clear advantage over other available kits in that they do not require phenol/chloroform or any protease treatments. Moreover, the kit allows the user to elute into a flexible elution volume ranging from 50 µL to 100 µL. The purified nucleic Acid is of the highest integrity, and can be used in a any downstream applications including PCR, qPCR, methylation-sensitive reverse transcription qPCR, reverse transcription PCR, methylation-sensitive PCR and Southern Blot analysis, Northern blotting, RNase protection and primer extension, expression array assays, and NGS.

Features and Benefits

- Isolate all sizes of circulating DNA, circulating and exosomal RNA, including microRNA, viral DNA/RNA in one elution
- Versatile urine input ranging from 10 mL - 30 mL
- No phenol extractions nor carrier RNA
- Bind and elute all RNA irrespective of size or GC content, without bias
- Concentrate cell-free circulating nucleic acid, viral DNA and RNA into a flexible elution volume ranging from 50 µL - 100 µL
- Purify high-quality RNA/DNA in 45 - 50 minutes
- Compatible with fresh, frozen or preserved urine sample

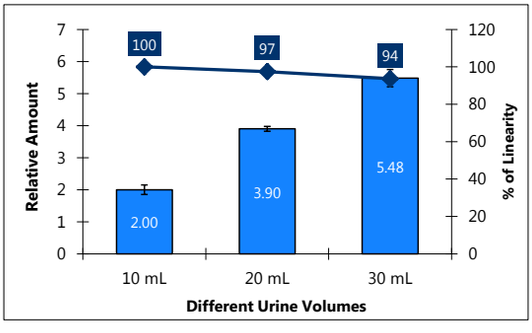

Figure 1. Linearity of RNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit was used to purify RNA from 10 mL, 20 mL and 30 mL urine. Two microlitres of the purified RNA was then used as the template in RT-qPCR reactions to assess the linearity of the purified miR-21 from the different urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit was able to recover 97% of miR-21 from 20 mL urine relative to the amount that is present in 10 mL urine. Moreover, 94% of the miR-21 was recovered from 30 mL urine relative to the amount that is present in 20 mL urine.

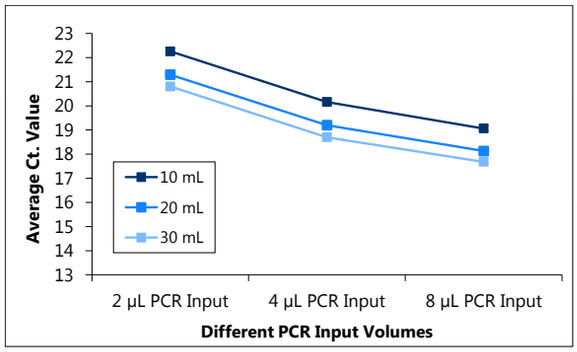

Figure 2. Determination of the amount of inhibition present in urine RNA samples when detecting miR-21. RNA was isolated from 10 mL, 20 mL and 30 mL urine using Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit. Increasing volumes of the elution (2, 4 and 8 µL) were used in a 20 µL reverse transcription reaction followed by qPCR amplification reaction to observe any decrease in Ct value. An increase in Ct values with increasing amount of template would be a clear indication of PCR inhibitors present in the sample. An increase in the PCR input volume used as a template in the reverse transcription reaction did not affect the Ct value generated from the qPCR amplification for miR-21. In fact the Ct. values tend to decrease with increasing the PCR input volume indicating that RNA purified from urine using Norgen's kit is free of the common inhibitors usually present in urine.

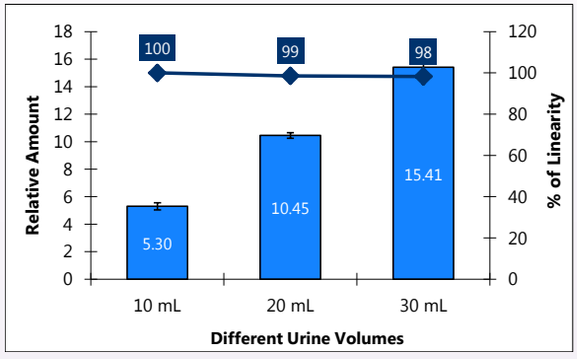

Figure 3. Linearity of DNA purified from increasing urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit was used to purify circulating NA from 10 mL, 20 mL and 30 mL urine. Two microlitres of the purified NA was then used as the template in qPCR reactions to assess the linearity of the purified the housekeeping 5S rRNA gene from the different urine volumes. Norgen's Urine Cell-Free Circulating and Viral Nucleic Acid Purification Maxi Kit was able to recover 99% of the 5S rRNA gene from 20 mL urine relative to the amount that is present in 10 mL urine. Moreover, 98% of the 5S rRNA gene was recovered from 30 mL urine relative to the amount that is present in 20 mL urine.

Feature	Specifications
Minimum Plasma/Serum Input	10 mL
Maximum Plasma/Serum Input	30 mL
Elution Volume	50-100 µL
Time to Complete Purifications	45-50 minutes
Size of Nucleic Acid Purified	All sizes, including miRNA and small RNA (<200 nt)
Average Yield	Variable depending on specimen

Commitment to Quality

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