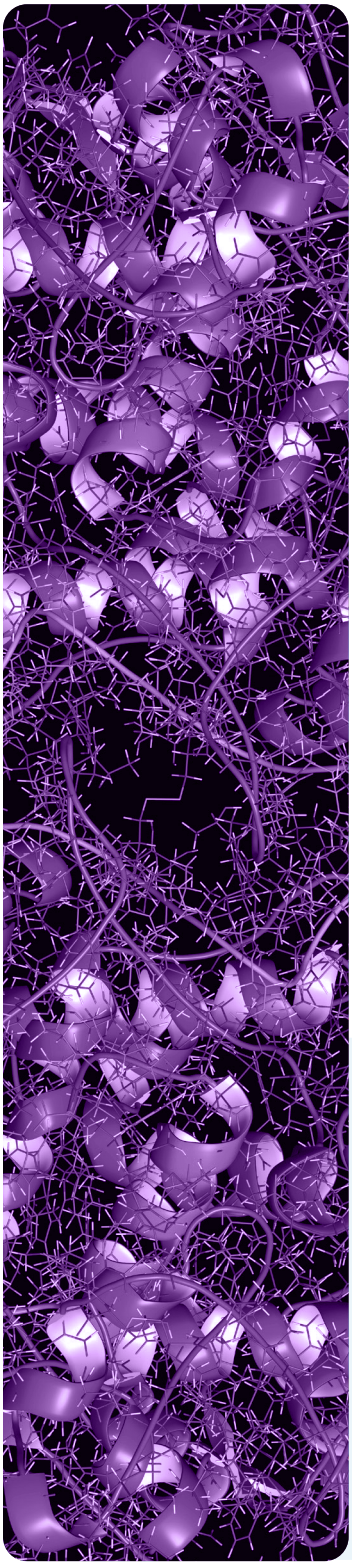

RNA/DNA/Protein Purification Plus Kits

CAT. 47700, 51600, 51700

For sequential isolation of total RNA, genomic DNA and total proteins from the same sample

- Sequentially purify total RNA (and miRNA), DNA and proteins from a single sample
- No sample splitting or need to use phenol or precipitation methods
- Purify RNA/DNA/Protein from cultured animal cells, tissues, blood, bacteria, yeast, fungi or plants
- Purification is based on spin column chromatography that uses Norgen's proprietary resin separation matrix

COLLECTION & PRESERVATION
EXTRACTION
APPLICATION

ISO 9001:2015 CERTIFIED QUALITY
ISO 13485:2016 CERTIFIED QUALITY
GMP COMPLIANT

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Advantages to Bring to Your Lab

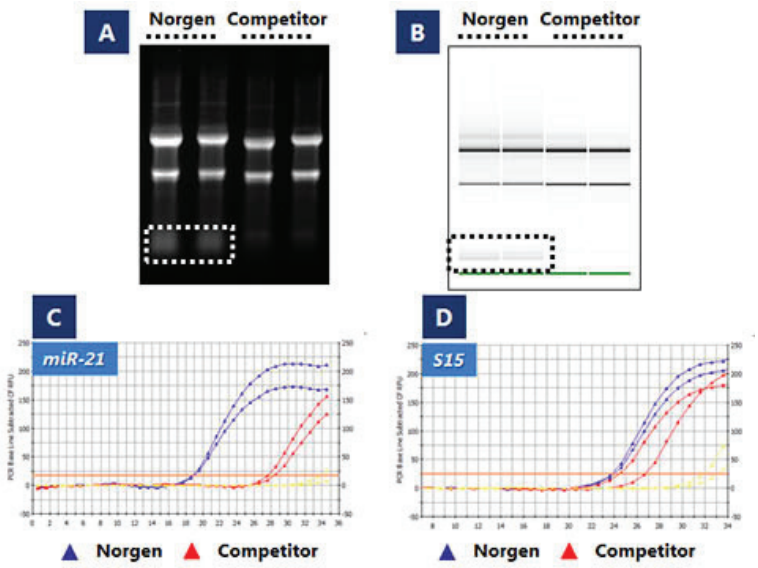

Figure 1. Recovery of True Total RNA including microRNA from HEK-293 Cells. Panel A is a 1X MOPS 1% agarose gel showing the RNA that was isolated from 2 different samples of ~ 800,000 HEK-293 cells using either Norgen's RNA/DNA/Protein Purification Plus Kit or a competitor's multiple-analyte purification kit. Both kits isolated large RNA (represented by 28S and 18S rRNA) with high integrity but Norgen's RNA/DNA/Protein Purification Plus Kit provided the added benefit of recovering small RNA without any additional protocol. Panel B is a result from a bioanalyzer resolution of the eluted RNA. Similar to the agarose gel, Norgen's RNA/DNA/Protein Purification Plus Kit showed the added benefit of recovering small RNA. The difference in small RNA recovery was also demonstrated by gene-specific RT-qPCR. One microgram of RNA was used in RT-qPCR reactions for human S15 (for Large RNA) and miR-21 (for microRNA) genes. The RNA isolated by Norgen's RNA/DNA/Protein Purification Plus Kit showed similar Ct value to RNA isolated by the competitor's kit for the large RNA (Panel D). However, Norgen's RNA/DNA/Protein Purification Plus Kit showed superior recovery of small RNA including microRNAs as depicted by the miR-21 RT-qPCR (Panel C).

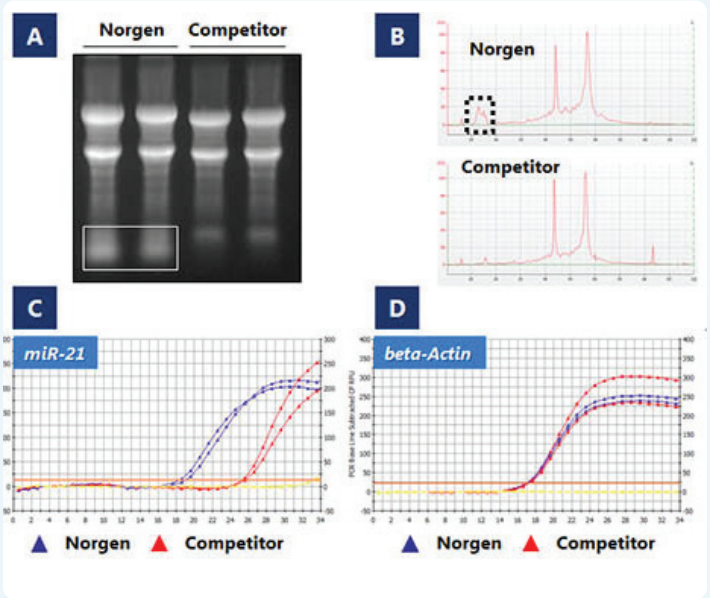

Figure 2. Recovery of True Total RNA including microRNA from Hamster Liver. Panel A is a 1X MOPS 1% agarose gel showing the RNA that was isolated from 2 different samples of 15 mg hamster liver using either Norgen's RNA/DNA/Protein Purification Plus Kit or a competitor's multiple-analyte purification kit. Both kits isolated large RNA (represented by 28S and 18S rRNA) with high integrity but Norgen's RNA/DNA/Protein Purification Plus Kit provided the added benefit of recovering small RNA without any additional protocol. Panel B is a result from a bioanalyzer resolution of the eluted RNA. Similar to the agarose gel, Norgen's RNA/DNA/Protein Purification Plus Kit showed the added benefit of recovering small RNA. The difference in small RNA recovery was also demonstrated by gene-specific RT-qPCR. One microgram of RNA was used in RT-qPCR reactions for hamster beta-Actin (for Large RNA) and miR-21 (for microRNA) genes. The RNA isolated by Norgen's RNA/DNA/Protein Purification Plus Kit showed similar Ct value to RNA isolated by the competitor's kit for the large RNA (Panel D). However, Norgen's RNA/DNA/Protein Purification Plus Kit showed superior recovery of small RNA including microRNAs as depicted by the miR-21 RT-qPCR (Panel C).

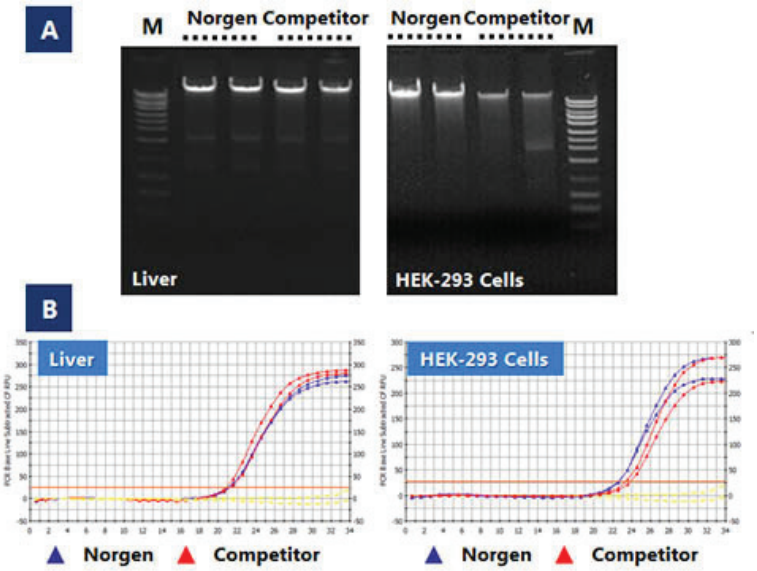

Figure 3. Recovery of Intact, High Quality Genomic DNA from HEK-293 cells and Hamster Liver. Panel A is a 1% agarose gel showing the gDNA isolated from the same HEK-293 cell or hamster liver samples using Norgen's RNA/DNA/Protein Purification Plus Kit or competitor's multiple-analyte purification kit. Lane M is Norgen's HighRanger 1 kb DNA Ladder and the sample lanes contain 10 µL of each of the 100 µL elutions. The gel showed high quality, and intact genomic DNA, with a better yield using Norgen's RNA/DNA/Protein Purification Plus Kit. Panel B is the result of qPCR amplification of 25 ng of eluted genomic DNA using 5S rRNA-specific primers. Genomic DNA isolated using Norgen's RNA/DNA/Protein Purification Plus Kit is of high quality and performed similar to or better than competitor's product.

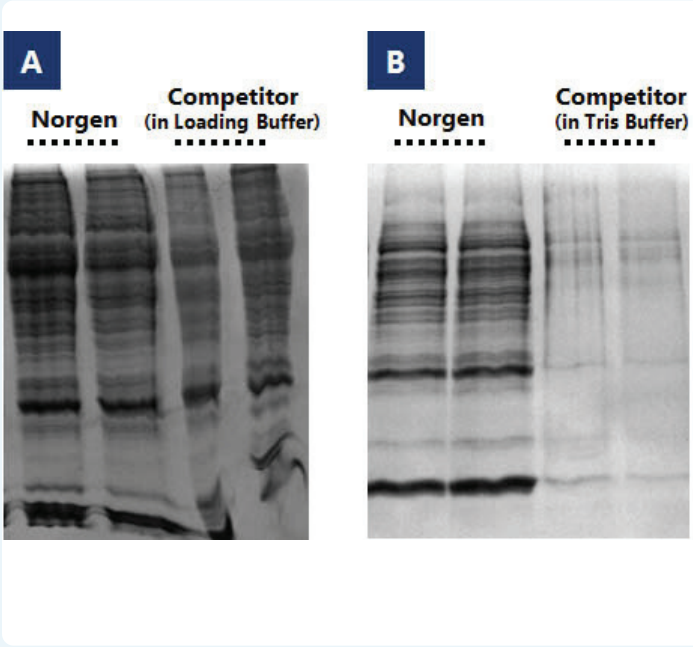

Figure 4. High Quality Total Proteins Eluted in Mass Spec-Compatible Buffer. Norgen's RNA/DNA/Protein Purification Plus Kit provides an additional column purification step for effective concentration and clean-up of the isolated proteins. In contrast, most competing multiple analyte isolation products require protein precipitation and the precipitated proteins are required to be resuspended in buffer with high-detergent content (such as SDS-PAGE loading dye) for full recovery. Protein fractions (from hamster liver) isolated by Norgen's RNA/DNA/Protein Purification Plus Kit and a competitor's kit were resolved on a 12% SDS-PAGE protein gel. Panel A showed that when the competitor's precipitated protein fraction was resuspended in a provided SDS-PAGE loading buffer, the protein recovery was similar among the two kits. Panel B showed that when the same precipitated protein fraction from the competitor's kit was resuspended in a Tris-based buffer containing no detergent or denaturant, the protein recovery became drastically reduced. In contrary, Norgen's RNA/DNA/Protein Purification Plus Kit purified proteins by column and the eluted proteins are already in a buffer compatible with most downstream applications including mass spectrophotometry as well as standard protein quantification methods (including Bradford assays).

KIT SPECIFICATIONS

Specification	Cat. 47700 (Column)	Cat. 51600 (Column)	Cat. 51700 (Well)
Maximum Column/Well Binding Capacity	50 µg for RNA 20 µg for DNA 200 µg for protein	35 µg for RNA 10 µg for DNA 100 µg for protein	50 µg for RNA 20 µg for DNA 150 µg for protein
Maximum Column Loading Volume	650 µL	650 µL	
Size of RNA Purified	All sizes, including small RNA (< 200 nt)	All sizes, including small RNA (< 200 nt)	All sizes, including small RNA (< 200 nt)
Size of DNA Purified	≥ 30 kb	≥ 30 kb	≥ 30 kb
Maximum Amount of Starting Material: Animal Cells Animal Tissues Blood Bacteria Yeast Fungi Plant Tissues	 5×10^6 cells 25 mg (for selected tissues) 100 µL 1×10^9 cells 1×10^8 cells 50 mg 50 mg	 5×10^5 cells 5 mg (for selected tissues) 50 µL - 25 mg 25 mg	 1×10^6 cells 10 mg 100 µL 1×10^9 cells 1×10^8 cells 40 mg 40 mg
Time to Complete 10 Purifications	30 minutes	30 minutes	35 minutes
Average Yield: HeLa Cells (1×10^6 cells) HeLa Cells (1×10^6 cells) HeLa Cells (1 x 106 cells)	 RNA: 15 µg DNA: 8 µg Protein: 150 µg	 RNA: 7.5 µg DNA: 1-2 µg Protein: 70 µg	 RNA: 12.5 µg DNA: 2 µg Protein: 55 µg

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