

cf-DNA/cf-RNA Preservative Tubes

For Whole Blood Collection and Preservation of
Cell-Free Circulating DNA and RNA



- ✓ Preserve cf-DNA & cf-RNA for 30 days at ambient temperature
- ✓ Preserve Circulating Tumor Cells (CTCs) for 14 days at ambient temperature
- ✓ Formaldehyde-free preservative, no cross-linking of DNA
- ✓ Prevent apoptosis of blood cells and fragmentation of genomic DNA
- ✓ Prevent hemolysis
- ✓ Produce high quality/quantity of plasma cf-DNA/cf-RNA
- ✓ No plasma volume loss during shipping
- ✓ Vacuumed to draw 8.4 mL of blood in 10 mL tubes
- ✓ PET tubes to avoid breakage during transit

Evaluation of commercial kits for purification of circulating free DNA

Norgen Biotek's new cf-DNA/cf-RNA Preservative Tubes are easy-to-use tubes for collection, preservation, storage and transport of whole blood. It preserves cf-DNA and cf-RNA for up to 30 days and can be stored and shipped at room temperature. Compatible with common DNA and RNA purification methods and automation.

cf-DNA Stable for 30 days at Ambient Temperature

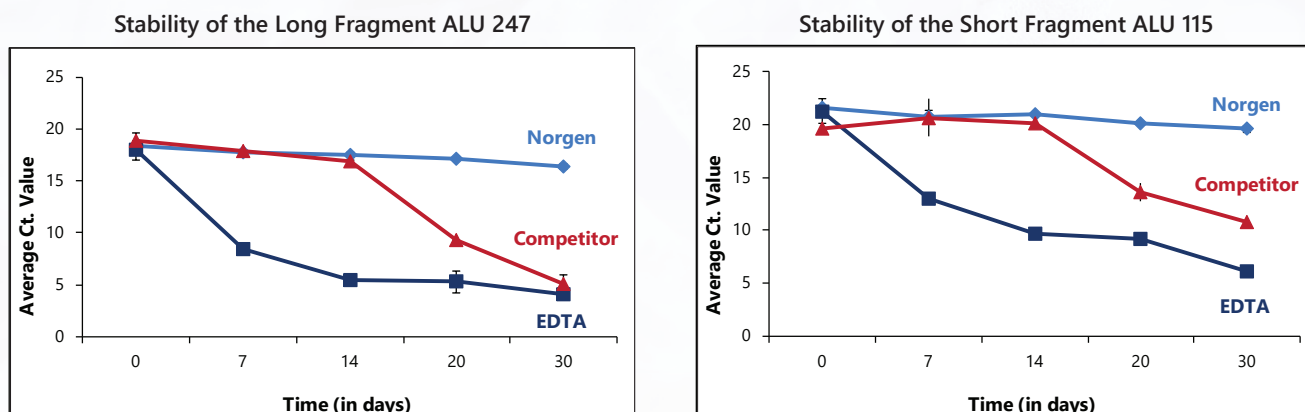


Figure 1. Effect of ambient temperature storage on cf-DNA (pDNA), exemplified by the short Alu (115bp) fragment, and genomic DNA (gDNA), exemplified by the large Alu (247 bp) fragment. Blood samples were drawn into either: 1) EDTA tubes, 2) Competitor tubes or 3) Norgen's cf-DNA/cf-RNA Preservative Tubes and stored at room temperature. Levels of the ALU gene (115 bp) representing the pDNA and the ALU gene (247 bp) representing the gDNA should stay the same during the stabilization period indicating proper stabilization and no hemolysis. No stabilization of cf-DNA and extensive hemolysis was observed in plasma collected on EDTA tubes and stored at room temperature. Competitor showed no significant stabilization after 14 days, whereas cf-DNA was stable for 30 days at room temperature for Norgen's cf-DNA/cf-RNA Preservative Tubes.

cf-RNA Stable for 30 days at Ambient Temperature

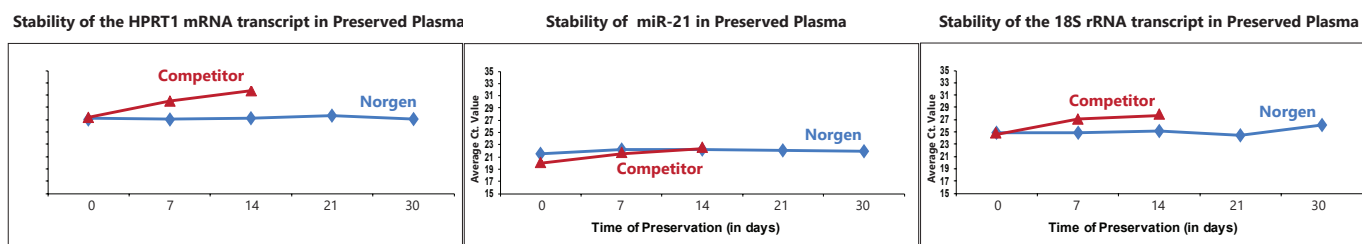


Figure 2. Effect of ambient temperature storage on cf-RNA, exemplified by the 18S rRNA transcript, HPRT1 mRNA transcript and miR-21. Blood samples were drawn into either: 1) Competitor tubes or 2) Norgen's cf-DNA/cf-RNA Preservative Tubes. Competitor's tubes were stored at room temperature for 14 days whereas Norgen's cf-DNA/cf-RNA Preservative Tubes were stored for 30 days at room temperature. Levels of the 18S rRNA transcript, HPRT1 mRNA transcript and miR-21 should stay the same during the stabilization. Competitor showed significantly higher Ct values for the three targets after 7 days indicating cf-RNA degradation, whereas cf-RNA was stable for 30 days at room temperature for Norgen's cf-DNA/cf-RNA Preservative Tubes as observed by the stable Ct value during the stabilization period.

✓ High cf-DNA Quantity from Norgen's Preserved Blood

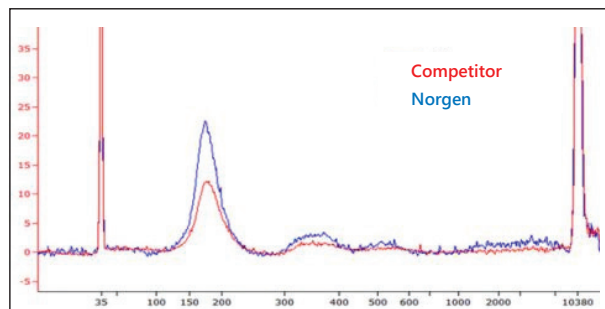


Figure 3. High Quantity of cf-DNA purified from plasma preserved using Norgen's cf-DNA/cf-RNA Preservative Tubes. Blood sample from the same donor was drawn into either Competitor tubes or Norgen's cf-DNA/cf-RNA Preservative Tubes and stored at room temperature for 7 days. The cf-DNA was then isolated from the entire plasma volume recovered from Norgen's tube (6.5mL) and from the Competitor tubes (3.5mL) using Norgen's Plasma/Serum Cell-Free Circulating DNA Purification Kits. As can be observed from the Agilent Bio-Analyzer High Sensitivity DNA Chip trace, Norgen yielded more cf-DNA (Blue peak) as compared to the cf-DNA recovered from the competitor's preservative tube.

✓ Prevent Hemolysis

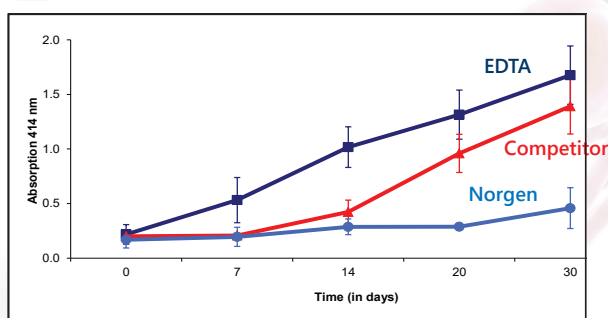


Figure 4. Hemolysis of collected blood measured over time. Blood samples drawn into three different tubes and stored up to 30 days. The amount of free hemoglobin, as measured at 414 nm, increased rapidly with each additional storage day in the EDTA tubes and Competitor tubes, and remained relatively constant in Norgen's cf-DNA/cf-RNA Preservative Tubes indicating that Norgen's tubes prevent hemolysis

✓ Prevent gDNA Release into Plasma during Shipping/Transportation

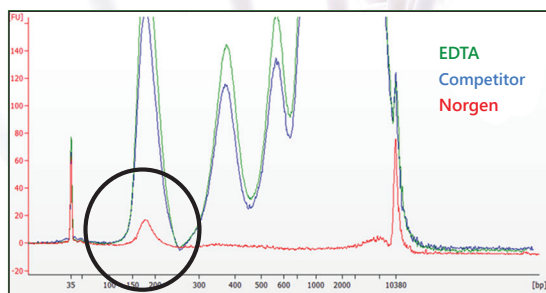


Figure 5. Prevent cell lysis and the release of gDNA and accumulation of apoptotic ladder in plasma. Blood samples were drawn into three different tubes (Norgen's, EDTA, and Competitor) and shipped. Norgen's cf-DNA/cf-RNA Preservative Tubes help prevent the release of high molecular weight gDNA into plasma while also minimizing the accumulation of contaminating apoptotic ladder from dying peripheral blood leukocytes during shipping as compared to both the competitor and EDTA tubes.

✓ Stable at High Shipping Temperatures (37°C)

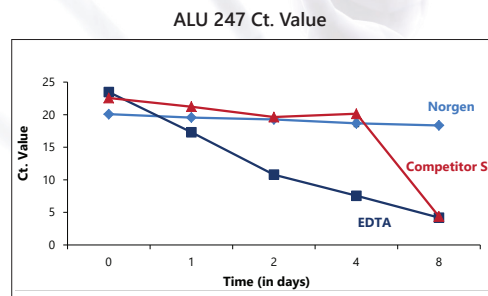


Figure 6. Effect of high temperature (37°C) storage for 8 days. Blood samples were drawn into either EDTA tubes, Competitor tubes or Norgen's cf-DNA/cf-RNA Preservative Tubes and stored at 37°C. cf-DNA was then isolated from processed plasma. cf-DNA stabilization was determined by real-time PCR using a long ALU gene (247 bp). Norgen's cf-DNA/cf-RNA Preservative Tubes stabilized samples for 8 days at 37°C as compared to both EDTA tubes (1 day) and the competitor (4 days).

Maximum Plasma Volume Recovery After Shipping



No plasma volume loss after shipping/transportation. Blood was drawn from 6 different donors into Norgen, Competitor, and EDTA tubes. One set was kept in the lab at room temperature and the other was packed in an insulated box and shipped from Thorold, ON via overnight air freight to Winnipeg, MB and then back to Thorold, ON (elapsed time 72 h). The plasma volume recovered from Norgen's cf-DNA/cf-RNA Preservative Tubes did not change before shipping or after shipping (6-7 mL recovered plasma) whereas for both Competitor tubes and EDTA Tubes the plasma volume recovered before shipping was ~ 4mL and after shipping was ~ 2.5mL.

LubioScience GmbH
Baumackerstrasse 24 | 8050 Zürich
T: +41 41 417 02 80 / F: +41 41 417 02 89
info@lubio.ch

Ordering Information

| Description | Prep Size | Cat. # |
|---|-----------|---------|
| cf-DNA/cf-RNA Preservative Tubes | 50 tubes | 63950 |
| cf-DNA/cf-RNA Preservative Tubes Dx (CE Marked) | 50 Tubes | Dx63950 |

Norgen's preservation technology is patent pending.

Visit our website: www.norgenbiotech.com to view our complete line of reagents and innovative sample preparation kits.



For more information
SCAN HERE

Related Products

| Description | Input Volume | Prep Size | Cat. # |
|---|-----------------|-----------|--------|
| Plasma/Serum Cell-Free Circulating DNA Purification Micro Kit | 10 µL - 200 µL | 50 preps | 55500 |
| Plasma/Serum Cell-Free Circulating DNA Purification Mini Kit | 200 µL - 500 µL | 50 preps | 55100 |
| Plasma/Serum Cell-Free Circulating DNA Purification Midi Kit | 1 mL - 4 mL | 20 preps | 55600 |
| Plasma/Serum Cell-Free Circulating DNA Purification Maxi Kit | 5 mL - 10 mL | 10 preps | 55800 |
| Plasma/Serum RNA Purification Mini Kit | 50 µL - 200 µL | 50 preps | 55000 |
| Plasma/Serum RNA Purification Midi Kit | 250 µL - 1.5 mL | 20 preps | 56100 |
| Plasma/Serum RNA Purification Maxi Kit | 2 mL - 5 mL | 10 preps | 56200 |
| Low Abundance DNA Quantification Kit | | 48 rxns | 57200 |
| Low Abundance RNA Quantification Kit | | 48 rxns | 58900 |

v2.0