

30 Day Preservation of cf-DNA

- Formaldehyde-free preservative, no cross-linking of DNA
- Preserve cf-DNA for 30 days at ambient temperature
- Maximum recovery of plasma (6-7 mL)
- Prevent hemolysis

- Prevent apoptosis of blood cells and fragmentation of genomic DNA
- Produce high quality/quantity of plasma cf-DNA
- Vacuated to draw 8.3 mL of blood in 10 mL tubes
- PET tubes to avoid breakage during shipping & handling

www.biocat.com/norgen/cfna

cf-DNA Stabilization and Isolation for NIPT and Liquid Biopsy Applications

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

1. cf-DNA Stable for Over 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 Preservative Tubes and stored at room temperature. Aliquots of blood were removed at the indicated times and the plasma was separated. DNA was isolated, and pDNA and gDNA concentrations were determined by real-time PCR using a short ALU gene target (115 bp) representing the pDNA and a long ALU gene (247 bp) representing the gDNA. Levels of these two fragments should stay the same for the duration indicating stabilization and no hemolysis. As expected, there was no stabilization of cf-DNA and extensive hemolysis in the EDTA tube. Competitor showed significantly lower Ct values for both genes after 14 days, whereas cf-DNA was stable for 30 days at room temperature for Norgen's cf-DNA Preservative Tubes.

2. Maximum Plasma Volume Recovery After Shipping



After Shipping



Figure 2. No plasma volume loss after shipping/transportation. Blood was drawn from 6 different donors in duplicate. 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). Upon return, preserved samples were stored at room temperature for 7 days before plasma was separated. The plasma volume recovered from Norgen's cf-DNA 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.

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3. Prevent Hemolysis



Figure 3. Hemolysis of collected blood measured over time. Blood samples drawn into three different tubes and stored up to 30 days. Hemolysis was determined by measuring the absorption of free hemoglobin in plasma from 3 subjects at 414 nm. over several time points. Mean absorption is shown. The amount of free hemoglobin increased rapidly with each additional storage day in the EDTA tubes and Competitor tubes, and remained relatively constant in Norgen's cf-DNA Preservative Tubes.

4. Prevent gDNA Release into Plasma



Figure 4. Prevent cell lysis and the release of gDNA and accumulation of apoptotic ladder in plasma. Blood samples drawn into three different tubes (Norgen's, EDTA, and Competitor) and stored for up to 30 days. Norgen's cf-DNA Preservative Tubes helps prevent the release of high molecular weight gDNA into plasma while also minimizing the accumulation of contaminating apoptotic ladder from dying peripheral blood leukocytes. As indicated in the black circle, gDNA contamination is at a very low level as compared to both the competitor and EDTA tubes. This is indicative of very low levels of cell lysis and subsequent release of gDNA into the preserved plasma sample.

5. Stable at High Shipping Temperatures (37°C)



Figure 5. 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 Preservative Tubes and stored at 37°C. cf-DNA was then isolated from processed plasma. gDNA concentration was determined by real-time PCR using a long ALU gene target (247 bp). The gDNA - target in EDTA tubes showed a significant drop in the Ct. value after 1 day of storage at 37°C compared to the initial time point, and continued to drop until the 8th day of storage. For Competitor, the gDNA - target remained stable up to the 4th day of storage and then the Ct. values started to significantly drop, indicating poor stabilization beyond day 4. The stabilization with Norgen's cf-DNA Preservative Tubes stabilized samples for 8 days.

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cf-DNA Preservative Tube System Workflow



Product Specifications

Description	Specs		
Tube Size	16 x 100 mm		
Tube Type	PET Tube		
Blood Draw Volume	8.3 mL in 10 mL Tubes		
Preservative Volume	1.7 mL		

Description	Specs
Recovered Plasma	Approximately 6-7 mL (not affected by shipping)
Anticoagulant	Proprietary
Preservative	Not formaldehyde
Length of Preservation	Up to 30 days at room temperature (15-25°C)

Ordering Information

Description	Prep Size	Cat. #
cf-DNA Preservative Tubes	50 tubes	63950
cf-DNA Preservative Tubes	100 tubes	63960

Norgen's preservation technology is patent pending.

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

www.biocat.com/norgen/cfna

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	5 mL - 10 mL	10 preps	55800

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