Datasheet V4.1

nonacus

Cell3™ Preserver: Whole Blood Stabilization tube

For collection and stabilisation of whole blood for circulating cell-free DNA (cfDNA) applications

Highlights

Stabilises whole blood for up to 14 days at room temperature

cfDNA stability for up to 14 days post blood draw makes Cell3 Preserver tubes ideal for batching samples prior to countrywide or international shipping.

Plastic, robust, evacuated tube in 10 ml format

Avoids potential glass breakage during transport or centrifugation, reducing the need for resampling, repeat visits by patients and ensures ease of use by phlebotomists using standard blood draw equipment.

Suitable for non-invasive applications

Quality and quantity of cfDNA extracted from blood and collected in Cell3 Preserver tubes was comparable to the market leading cell stabilisation tube.

Developed and verified with data across multiple platforms

Data generated using qPCR, DNA fragment analyser and NGS showed equivalent or better results/Metrics for cfDNA analysis compared to the market leading company.

Introduction

Modern genetic techniques such as next generation sequencing (NGS), droplet digital PCR (ddPCR) and quantitative PCR (qPCR) are extremely sensitive and can provide a rapid and accurate assessment of genetic variants from a blood sample. Over recent years, circulating cfDNA in biological fluids has been of growing interest in oncology studies.

However, blood collection in routine EDTA tubes can have a negative impact on cfDNA based tests if plasma is not isolated within 24 hours from blood draw, due to the degradation of nucleated (white blood) cells and shedding of genomic DNA (gDNA) into the plasma.

Tube format

Cell3 Preserver tubes consist of evacuated, polyethylene terephthalate (PET) tubes designed for direct-draw blood collection. They contain an additive at the correct volume to simultaneously stabilise blood cells and impede coagulation at the time of collection.

The stabiliser acts by preserving the nucleated cells in an intact state until processing and analysis can be performed. Phlebotomists can use these tubes with standard draw techniques and equipment.

Data quality

For quality assurance purposes, Cell3 Preserver tubes were compared to market leading cell stabilisation tubes for key technical aspects.

Haemolysis

Whole blood collected using Cell3 Preserver tubes demonstrates no or minimal haemolysis for up to 14 days post blood draw. This allows clear distinction between different blood layers, making it suitable for manual and automated processing.

Sample stability

Concentration of total DNA in plasma was not impacted and remained consistent across 14 days when stored with Cell3 Preserver tubes (Figure 1).

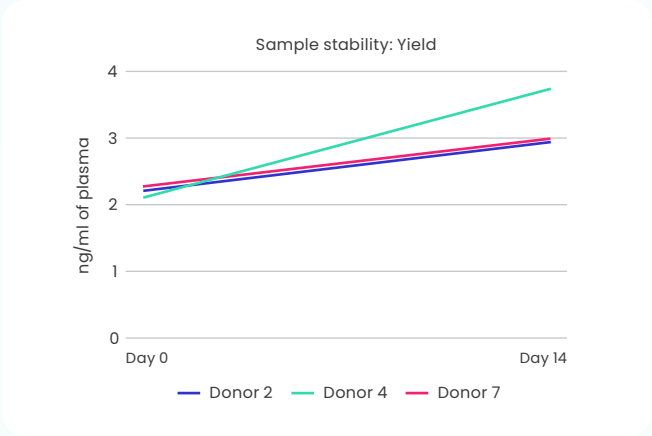

Figure 1. Stability of cfDNA yield [ng per 1 ml of plasma]. Sample stability was evaluated using 3 different donors across 14 days, where total yields were shown consistent between the time points.

Genomic DNA contamination

A lack of white blood cell (WBC) stabilisation can lead to cell lysis and the release of gDNA into plasma, resulting in contamination that negatively impacts downstream analysis. Cell3 Preserver tubes stabilise WBCs for up to 14 days, minimising gDNA contamination and maintaining high cfDNA integrity. By preserving blood samples at consistently high quality, Cell3 Preserver tubes ensure reliable and reproducible cfDNA results.

Concentrations of greater than 70% were seen at blood draw (day 0) and provide comparable cfDNA for up to 14 days (Figure 2).

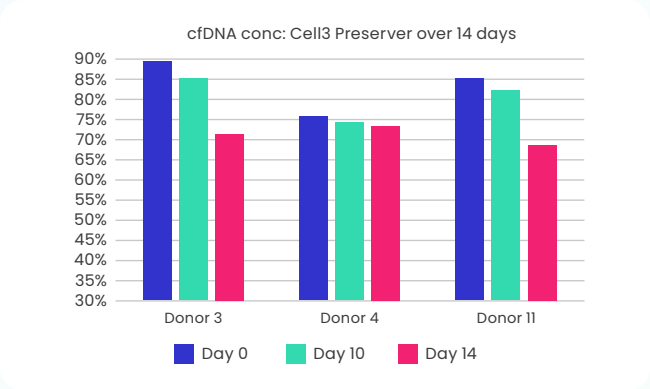

Figure 2. Stabilised cfDNA across 14 days. WBC stability and cfDNA integrity was evaluated using three different donors across 14 days, measuring cfDNA for each time point.

Cell-free DNA quality

cfDNA extracted from plasma and stored in Cell3 Preserver tubes provides DNA quality suitable for downstream analysis like NGS, ddPCR and qPCR.

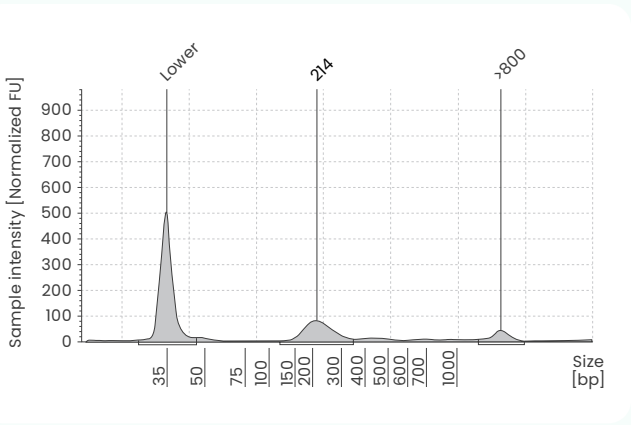

Figure 3. Electropherogram profile of cfDNA extracted* from plasma separated after 14 days, generated with TapeStation 4200, cfDNA assay. The electropherogram shows the distinct profile typical for good quality cfDNA samples.

*cfDNA extracted with Cell3 Xtract.

Summary

Cell3 Preserver tubes are plastic whole blood preservation tubes that have been validated to maintain cfDNA stability for 14 days after collection, matching the performance of the leading market product. The Cell3 Preserver tubes have been designed for sample collection and shipment from around the world to centralised lab facilities to maximise diagnostic potential.

Nonacus Limited
Quinton Business Park
11 Ridgeway
Birmingham
B32 1AF

nonacus.com
info@nonacus.com