Clinical Sample Concentrators – QIAGEN Sample Purification for In Vitro Diagnostic Use

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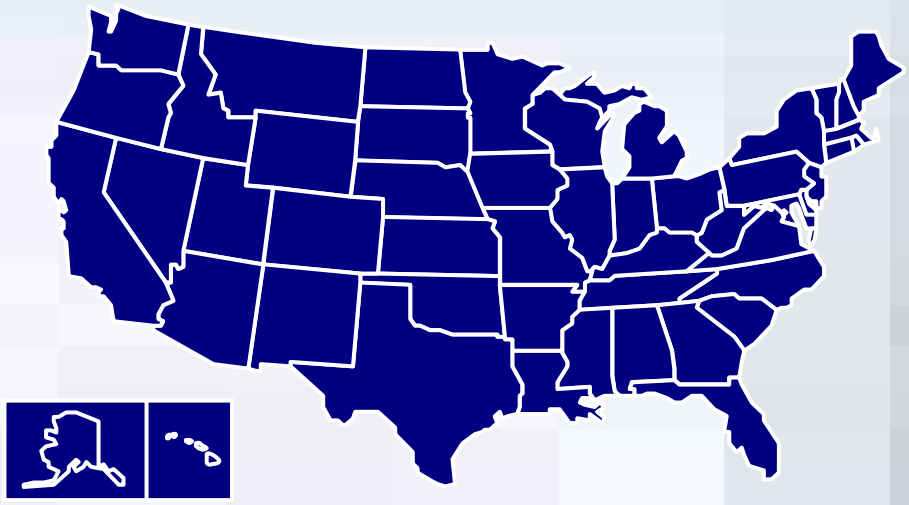

Agenda

Clinical Sample Concentrator Kits IVD–class I

- Background on Clinical Sample Concentrators
  - Classification
  - Regulation
- QIAGEN solutions
  - Portfolio of Clinical Sample Concentrator Kits
  - Features and advantages
  - Performance characteristics
- Summary

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Clinical Sample Concentrator
Background I – Classification

The US Food and Drug Administration (FDA) requires that **sample preparation products** used for clinical diagnostic applications from human samples be classified as **Clinical sample concentrators** under the US Code of Federal Regulations pertaining to medical devices (21 CFR 862.2310).

FDA requires registration and listing of sample preparation products which are part of systems for human diagnostics, if such products are:

- Used by sponsor of a submission as front end
- Used by customers for clinical diagnostic use

Clinical sample concentrators (CSCs) are Class 1 Medical Devices that are exempt from FDA 510k pre-market notification submission requirements. CSCs require manufacture under an FDA compliant Quality System.

Clinical Sample Concentrator
Background II – regulation

TITLE 21 – FOOD AND DRUGS

CHAPTER I – FOOD AND DRUG ADMINISTRATION

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SUBCHAPTER H – MEDICAL DEVICES

PART 862 – CLINICAL CHEMISTRY AND CLINICAL TOXICOLOGY DEVICES

Subpart C – Clinical Laboratory Instruments

§ 862.2310 Clinical sample concentrator.

(a) Identification. A clinical sample concentrator is a device intended to concentrate (by dialysis, evaporation, etc.) serum, urine, cerebrospinal fluid, and other body fluids before the fluids are analyzed.

(b) Classification. Class I (general controls). The device is exempt from the premarket notification procedures in subpart E of part 807 of this chapter subject to the limitations in 862.9.

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QIAGEN´s solutions

DSP Kits

Diagnostic Sample Preparation

QIAGEN's Clinical Sample Concentrator Offerings I
Available in November 2010

QIAamp® DSP Kits – manual

1.	QIAamp DSP Virus Kit (50)	Cat. no. 60704
2.	QIAamp DSP Circulating NA Kit (50)	Cat. no. 61504
3.	QIAamp DSP 96 DNA Blood Kit (12)	Cat. no. 61162
4.	QIAamp DSP DNA FFPE Tissue Kit (50)	Cat. no. 60404

QIAamp DSP Kits – manual and automatable on QIAcube®

5.	QIAamp DSP DNA Blood Mini Kit (50)	Cat. no. 61104
6.	QIAamp DSP DNA Mini Kit (50)	Cat. no. 61304
7.	QIAamp DSP Virus Spin Kit (50)	Cat. no. 61704
8.	QIAamp DSP Viral RNA Mini Kit (50)	Cat. no. 61904

QIAGEN's Clinical Sample Concentrator Offerings II
Available in November 2010

EZ1® DSP Kits for the EZ1 Advanced / Advanced XL

9. EZ1 DSP Virus Kit (48) Cat. no. 62724
10. EZ1 DSP DNA Blood Kit (48) Cat. no. 62124

QIAsymphony® DSP Kits for the QIAsymphony SP

11. QIAsymphony DSP Virus/Pathogen Kit

    Mini Kit (192) Cat. no. 937036

    Midi Kit (96) Cat. no. 937055

12. QIAsymphony DSP AXpH DNA Kit (192) Cat. no. 937156

Features of Clinical Sample Concentrator Kits
Production standards

DSP Kits are …

- Designed for in vitro diagnostic (IVD) use
- Manufactured in compliance with Quality System Regulations (QSR)
  - Produced under cGMP
- Expiry dated at kit and component level
- Tested by a functional kit end-test before release (QC)
- Registered and listed under 21 CFR 862.2310 (Clinical sample Concentrator)

Features of Clinical Sample Concentrator Kits
Regulatory compliance

DSP Kits are…

- Developed and manufactured in compliance with
  - ISO 13485 medical device: Quality management systems requirement for regulatory purposes
  - FDA Quality System Regulations 21 CFR 820

- In compliance with international IVD standards, e.g.
  - EN 13640 Stability testing of in vitro diagnostic reagents
  - ISO 14971 Application of risk management to medical devices

What does CSC mean to you?

Key benefits of DSP Kits

- Easy integration into existing diagnostic workflows
- GMP compliant for use in lab-developed assay and IVD applications
- Batch-to-batch consistency
- Robustness for FDA 510(K) clearance

As the *gold standard* in purification, QIAGEN is positioned to provide the best in class sample prep for in vitro diagnostic use

Performance characteristics

Performance evaluation

- ⇒ Limit of detection
- ⇒ Linear range
- ⇒ Accuracy
- ⇒ Precision
- ⇒ Robustness
- ⇒ Cross contamination
- ⇒ Stability testing
- ⇒ Eluate stability
- ⇒ ……

Performance characteristics

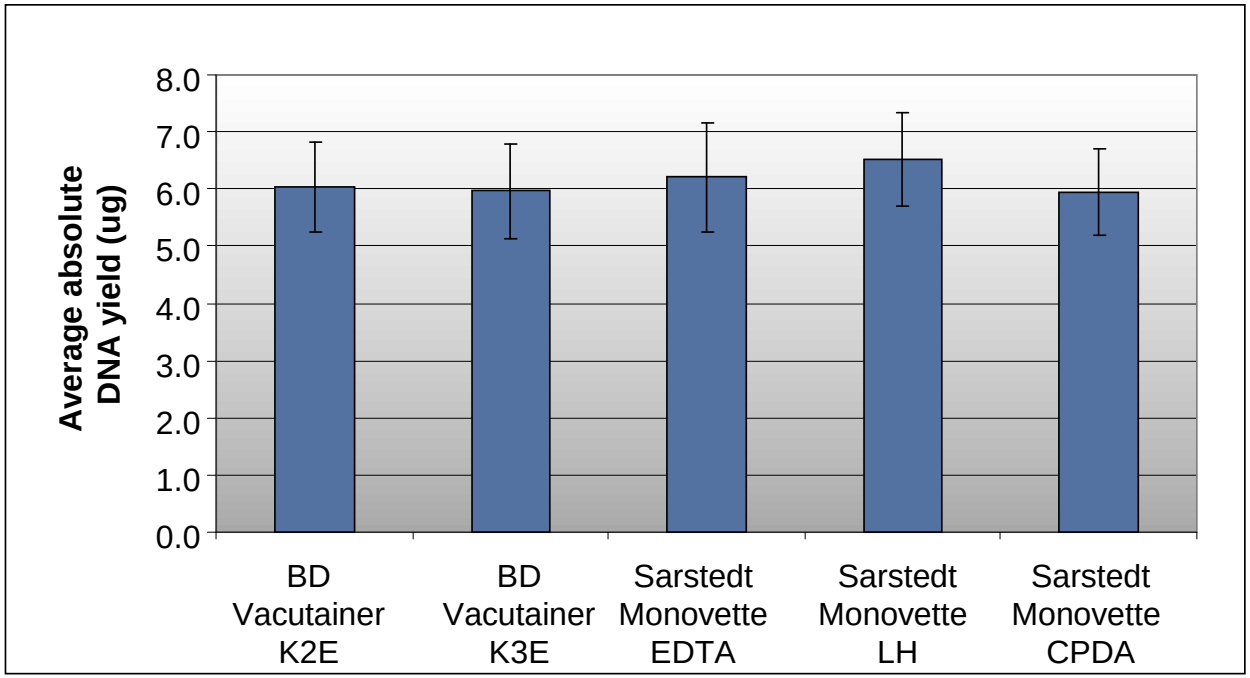
Clinical Sample Concentrator

QIAamp DSP DNA Blood Kit system

Performance characteristics

QIAamp DSP DNA Blood Mini Kit (Cat. no. 61104) automated on QIAcube

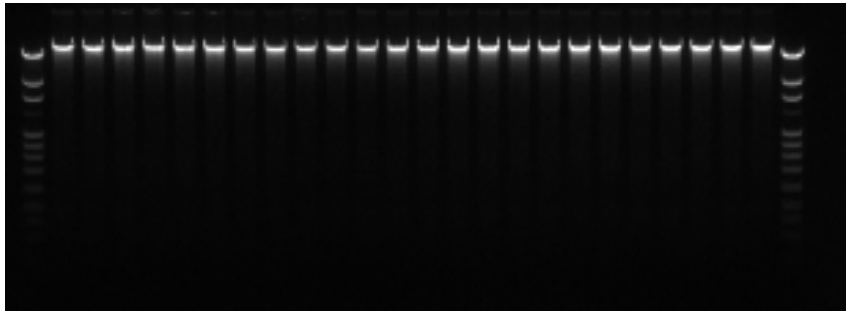
Average absolute yields of DNA from blood samples collected using various collection tubes and anticoagulants



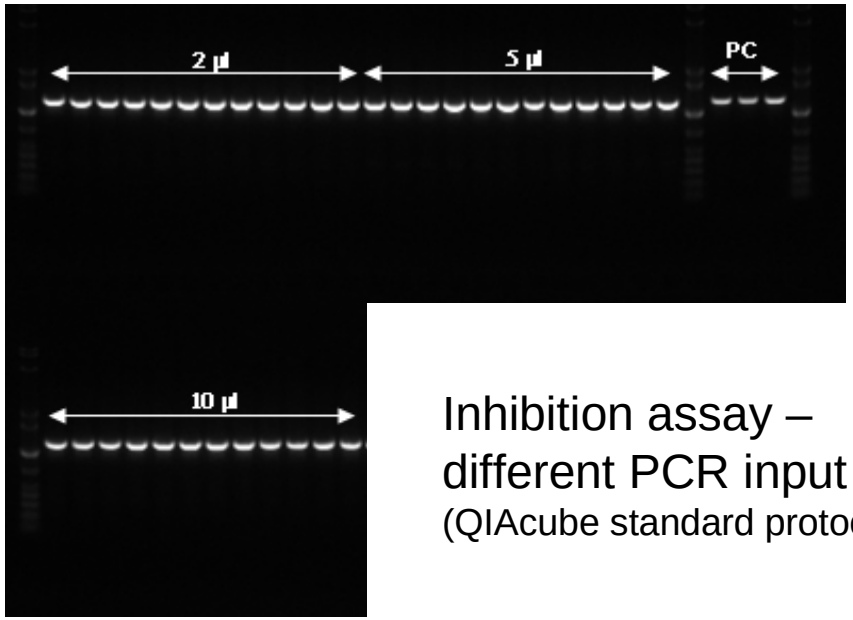
Mean absolute yield of DNA of 6 donor bloods per collection tube
(QIAcube standard protocol with elution volume 200 µl)

Performance characteristics

QIAamp DSP DNA Mini Kit (Cat. no. 61304) automated on QIAcube



DNA integrity –
genomic gel
(QIAcube manual lysis protocol)



Inhibition assay –
different PCR input volumes
(QIAcube standard protocol with 100 µl elution)

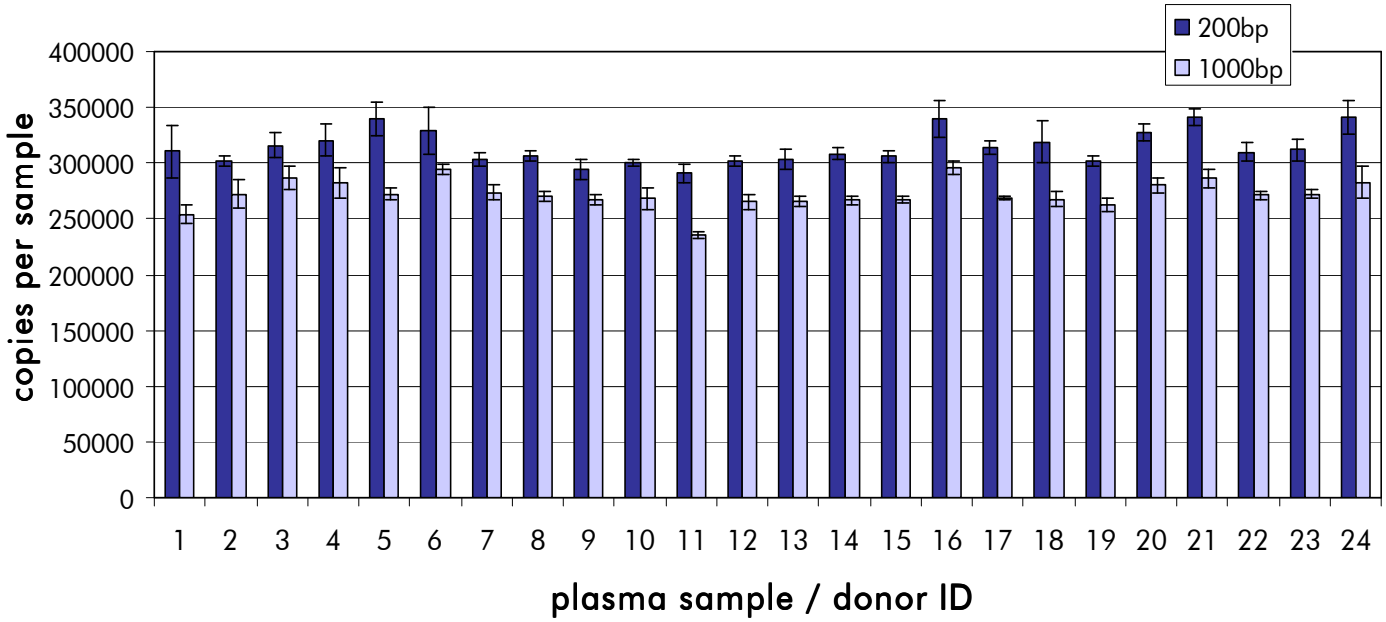
Performance characteristics

Clinical Sample Concentrator

QIAamp DSP Circulating NA Kit system

Performance characteristics

QIAamp DSP Circulating NA Kit (Cat. no. 61504)



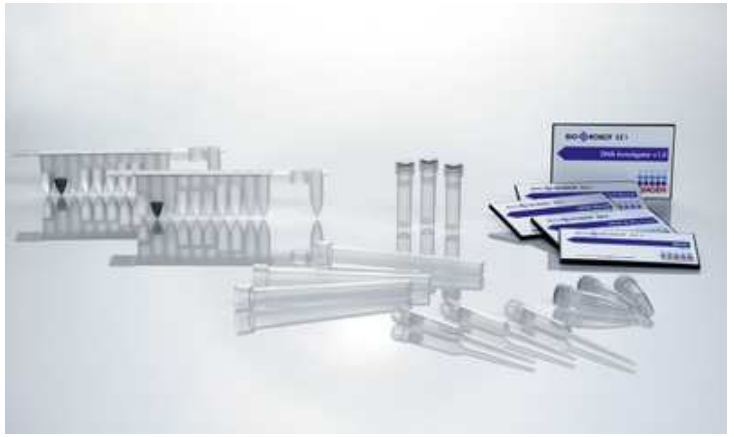
Recovery of spike-in control in EDTA plasma

- **200 bp and 1000 bp fragments added to plasma before extraction**
- **Recovery measured by duplex real-time PCR**
- **Reproducible DNA yield among different donors**

Performance characteristics

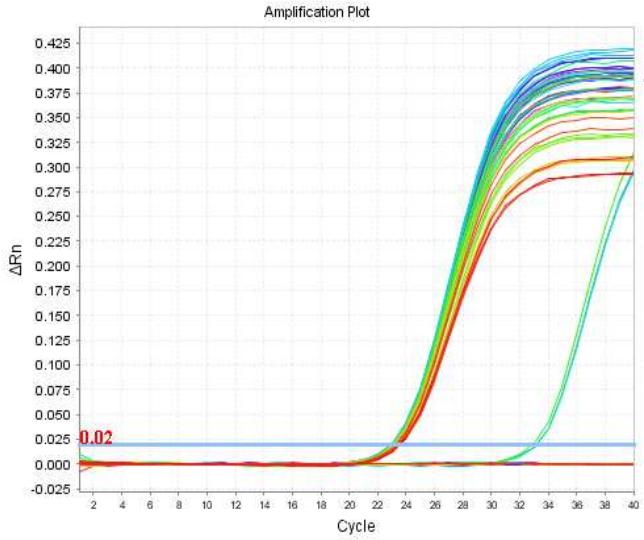
Clinical Sample Concentrator

EZ1 DSP DNA Blood Kit system



Performance characteristics

EZ1 Adv XL, Blood 200 µl / 200 µl														
1	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W
2	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE
3	W	W	W	W	W	W	W	W	W	W	W	W	W	W
4	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W
5	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE
6	W	W	W	W	W	W	W	W	W	W	W	W	W	W
7	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W
8	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE
9	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE	W	MALE



Typical amplification plot of male samples
Mean quantification: 35,700 copies/PCR

Positive controls (10 copies/µl)

Negative samples
– no SYBR sequence detected

No detectable cross-contamination

Performance characteristics

Clinical Sample Concentrator

QIAsymphony DSP Virus/Pathogen Kit system

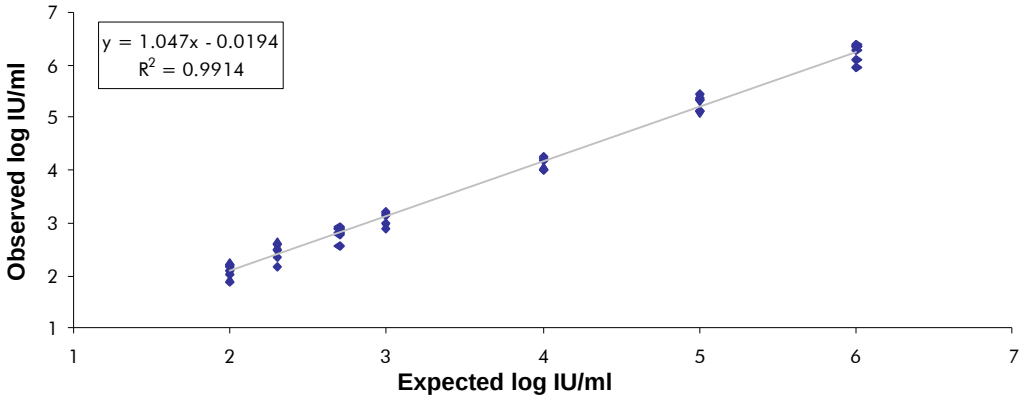
Performance characteristics

The QIAsymphony DSP Virus/Pathogen Mini and Midi Kits can be used for fully automated purification of nucleic acids from a broad range of DNA and RNA viruses as well as bacterial DNA from Gram-negative and Gram-positive bacteria from

- Plasma
- Serum
- CSF
- Respiratory samples (BAL, dried swabs, transport media,aspirates, sputum)
- Urogenital samples (urine, transport media)

Performance characteristics

QIAsymphony DSP Virus/Pathogen Kits



Panel member	n	IU/ml	CV (%)	log IU/ml	SD (log IU/ml)
1	6	1835700	30.04	6.24	0.15
2	6	199931	26.99	5.28	0.13
3	5	13785	21.02	4.13	0.09
4	5	1363	17.49	3.13	0.09
5	6	642	24.82	2.79	0.12
6	6	294	31.12	2.44	0.16
7	6	123	23.25	2.08	0.11

Linearity

Linear range of yields using the Virus Cellfree 1000 protocol. The linear range of the Virus Cellfree protocol was determined. Standard deviations and coefficients of variations (CVs) were determined for different dilution series in the linear range of the appropriate downstream assays.

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Clinical Sample Concentrator Kits IVD–class I

QIAGEN now offers you a broad range of Diagnostic Sample Preparation Kits listed under CFR 862.2310 for manual and automated isolation of DNA and RNA from:

- Blood
- Plasma/serum
- CSF
- FFPE tissue
- Respiratory samples
- Urogenital samples

…to simplify your diagnostic workflow and help you remain in compliance with your regulatory requirements

Questions

and

Answers