Tech Note
ScanDrop²

DNA Dilution: Comparison Between UV/Vis Measurement and Real-Time qPCR

Introduction

ScanDrop² spectrophotometer is an analytical device designed for the daily lab routine. It is the ideal system to determine concentration and to asses quality of nucleic acid samples. Within a few seconds, a whole series of samples is measured automatically, using small amounts (micro volumes) without any consumables, thus reducing lab costs. In addition, through a single-click, analyzed results are display in one simple screen and the full range of parameters can be easily fetched.

Altogether, the ScanDrop² spectrophotometer is very easy to use and is perfectly tailored for all routine applications.

Your Benefits

- Fast results with minimum effort
- Save costs and reduce lab consumables: measurements without plastic consumables
- Flexible and automatic result analysis depending on the type of sample and application

Application

DNA was isolated from one *E. coli* K12 sample. This stock solution was diluted 1:1 in five steps and each concentration was measured and determined in duplicate using the ScanDrop² spectrophotometer. For comparison, a real-time quantitative PCR, specified for *E. coli* K12 was carried out using a qTOWER³.

Results

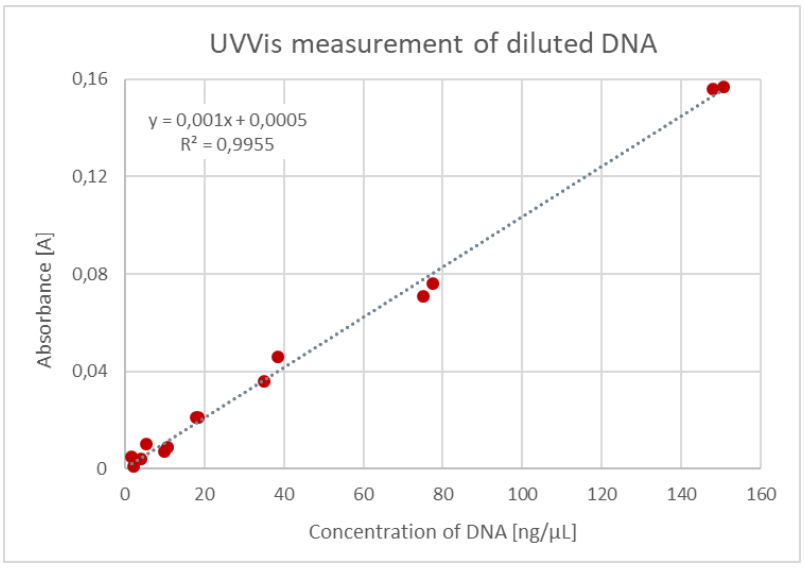

Figure 1: Calibration curve based on absorbance values

The linear regression of measured DNA concentration and the corresponding corelating coefficient of determination (R^2 at 0.9955) demonstrates the excellent agreement between sample dilution (ng/µL) and the measured absorbance as obtained with the ScanDrop².

Analytik Jena GmbH
Konrad-Zuse-Strasse 1
07745 Jena · Germany

Phone +49 3641 77 70
Fax +49 3641 77 9279
info@analytik-jena.com
www.analytik-jena.com

Version: 07.2020
Author Abbr. FrEs, MKe

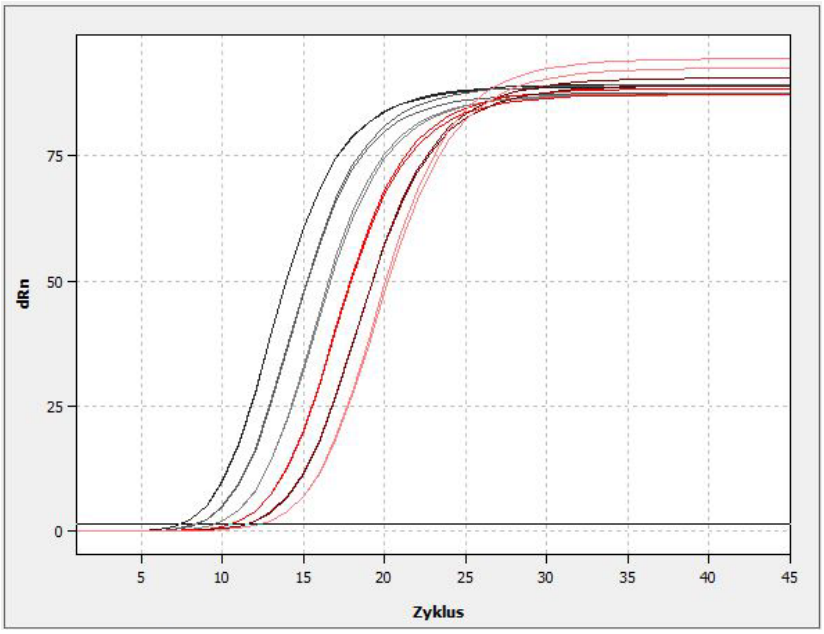

Figure 2: Amplification plots of *E. coli* K12 specific qPCR

The previous ScanDrop² measurements are fully in-line with an *E. coli* specific real-time amplification performed with a qTOWER³. The plots (fig. 2) show the expected ct value shift as a function of the DNA dilution.

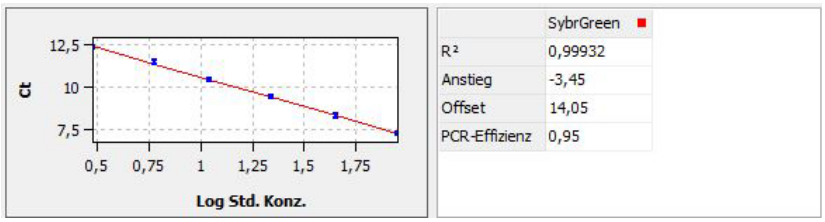

Figure 3: Standard line based on Ct vales

The automatically determined linear regression validates the 1:1 dilution of DNA samples derived from the initial stock solution. The correlating coefficient R^2 with 0.99 is in reasonable aggreement with the UV/Vis results.

The ScanDrop² spectrophotometer, the fully reusable (consumable-free) micro-volume Butterfly Cuvette and a simple 1:1 dilution step provide fast and very reliable results. Here, we exemplify the spectrometer's performance in comparison with the real-time quantitative PCR DNA determination. Overall the UV/Vis measurements using the ScanDrop² provide a simple and reliable method to determine DNA in a wide concentration range, using small sample amounts (micro-volume) and a fully re-usable cuvette system (Butterfly Cuvette).

Reference: TechNote_ScanDrop²_0003_en_DNA_Dilution-DRAFT.docx

Analytik Jena GmbH
Konrad-Zuse-Strasse 1
07745 Jena · Germany

Phone +49 3641 77 70
Fax +49 3641 77 9279
info@analytik-jena.com
www.analytik-jena.com

Version: 07.2020
Author Abbr. FrEs, MKe