

DropSense16 App – RNA

Quantification of RNA using cDrop on the DropSense16



Fig 1. App button on the DropSense16 app selection screen

Introduction

A specific app for precise quantification of RNA using Trinean's proprietary cDrop software is available on DropSense16. This advanced analytical method is used to isolate the profile of the desired molecule (here RNA) from the measured UV/VIS spectrum, thereby distinguishing it from interfering chemicals. The specific RNA profile is then used for determining the concentration. In this note we describe how to use this application and how to interpret its results.

App description

This cDrop app is specifically designed to quantify RNA from any sample source. There is no restriction on the extraction method or isolation kit used for RNA isolation.

For proper use of this application, always use pure water as blank(s) on the DropSense16 slides.

Results

The cDrop algorithm in this app will analyse the measured UV/VIS spectrum (white curve) to extract the presence of four specific profiles (see figure 2):

- **RNA (blue)** = molecule of interest.
- **Impurities (orange)** = collection of all non-RNA molecules that also absorb in the UV-region. These are: DNA residue, nucleotides, thiocyanate salts, phenol and azide.
- **Background (grey)** = profile combining intrinsic sample turbidity and scattering from bead contamination.
- **Residue (yellow)** = unidentified part of the measured spectrum, also shown as % of the measured spectrum (white curve).

In certain cases, the cDrop software isn't fit to discriminate RNA from other nucleic acid residue: (1) when a sample appears to have an OD at A260 lower than 0.5 (10mm) after background correction or (2) when the residue is higher than 2.5% due to an unknown component. For these circumstances, all nucleic acids present will be grouped and the blue RNA profile will be replaced by a pink 'total nucleic acids' profile (see figure 2). The concentration is calculated using the A260 value of this profile multiplied by the concentration factor of RNA (= 40).



Fig 2. Illustrations of the results display

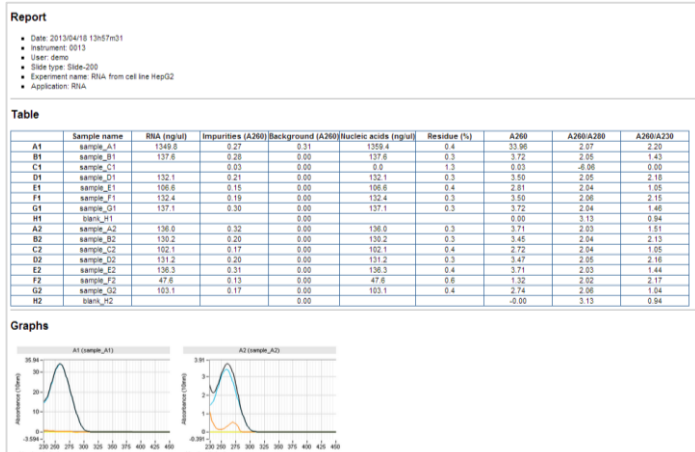


Fig 3. Example of HTML report

Report

Two report types are generated: an HTML file and a CSV file (opens in Windows excel). Both reports include a table containing all cDrop information as shown on the results screen as well as the classic spectrometry data like A280, 260/280 absorbance data (see figure 3). In addition, the HTML report also contains an illustration of all cDrop curves of each separate sample (see figure 3).

These reports can be exported from DropSense16 using a USB key or the network connection. A folder is exported containing both reports and an additional DropSense16 specific measurement file (.bin).



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