



DropSense16 App – A280 protein

Total protein quantification on DropSense16 using A280

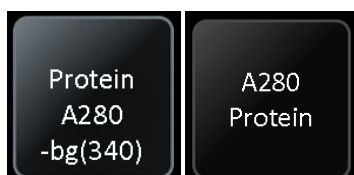


Fig 1. App buttons on the DropSense16 app selection screen

Introduction

An app for quantification of total purified protein (mg/ml), based on the classic A280 peak height determination. On the DropSense16, apps are available using the classic single-wavelength baseline corrected UV/VIS spectrum (indicated with -bg(340)) or an innovative turbidity full spectral background correction. In this note we describe how to use these applications and how to interpret their results.

App description

Total protein concentration in mg/ml is determined from the measured UV/VIS spectrum after baseline subtraction. When selecting an app using classic single-wavelength baseline correction, a custom wavelength can be selected. The concentration is determined using the absorbance value at 280 nm and specific E1% weight/volume extinction coefficients (default E1%=10 for unspecified protein mixes). For proper use of this application, always use (a) correct blank(s) on DropSense16 slides: the sample solution buffer or pure water.

Results on screen

The A280 concentration in mg/ml is shown for each sample on the slide thumbnail view. For more details just tap on a sample in the slide and the measured UV/VIS spectrum after a baseline correction is shown (white curve). Furthermore, the A280 concentration in mg/ml is displayed on screen, calculated based on the A280 values and the specific E1% weight/volume extinction coefficients, and the A260/A280 ratio is listed. A horizontal red band on the spectrum indicates saturation when absorbance values have passed the upper limit of detection (200 OD on a DP-D+ slide). Values outside the linear range are not reliable.

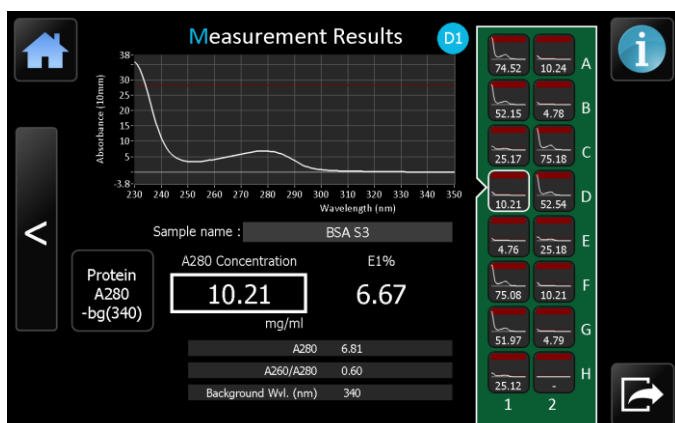


Fig 2. Illustration of the results screen on DropSense16

Table

Position	Sample name	A280 Concentration (mg/ml)	E1%	A280	A260/A280	Background Wvl. (nm)
A1	BSA stock	74.33	6.67	49.58	0.59	340
B1	BSA S1	52.26	6.67	34.86	0.59	340
C1	BSA S2	25.17	6.67	16.79	0.59	340
D1	BSA S3	10.22	6.67	6.82	0.60	340
E1	BSA S4	4.84	6.67	3.23	0.57	340
F1	BSA stock	75.07	6.67	50.07	0.59	340
G1	BSA S1	51.92	6.67	34.63	0.59	340
H1	BSA S2	25.01	6.67	16.68	0.59	340
A2	BSA S3	10.22	6.67	6.82	0.60	340
B2	BSA S4	4.85	6.67	3.23	0.57	340
C2	BSA stock	74.94	6.67	49.98	0.59	340
D2	BSA S1	52.47	6.67	35.00	0.59	340
E2	BSA S2	25.20	6.67	16.81	0.59	340
F2	BSA S3	10.23	6.67	6.83	0.60	340
G2	BSA S4	4.85	6.67	3.24	0.57	340
H2	PBS	0.00	-	0.00	-	340

A280 Concentration (mg/ml)	
74.33	10.22
52.26	4.85
25.17	74.94
10.22	52.47
4.84	25.20
75.07	10.23
51.92	4.85
25.01	0.00
1	2

App Report

Four report types are generated on export to USB or network: an HTML, XML, TXT and CSV file (for import in MS Excel). All reports contain a table with the measured A280 values and calculated A280 concentrations (mg/ml) based on specific E1% weight/volume extinction coefficients (see figure 3, top). The selected baseline correction wavelength and the A260/A280 ratio are also shown. In addition, for each separate measurement, the HTML report contains graphs with the measured UV/VIS spectrum (see figure 3, bottom). These reports are easily exported from the DropSense16 to a USB key, network folder or to a smart device (using the QR code). In addition, a DropSense16 specific measurement file (.bin) is also exported.

Graphs

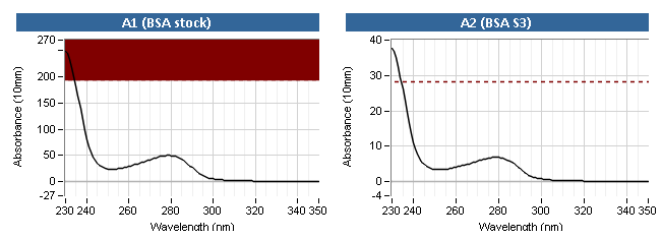


Fig 3. Example of HTML report of BSA samples measured on a slide-200.

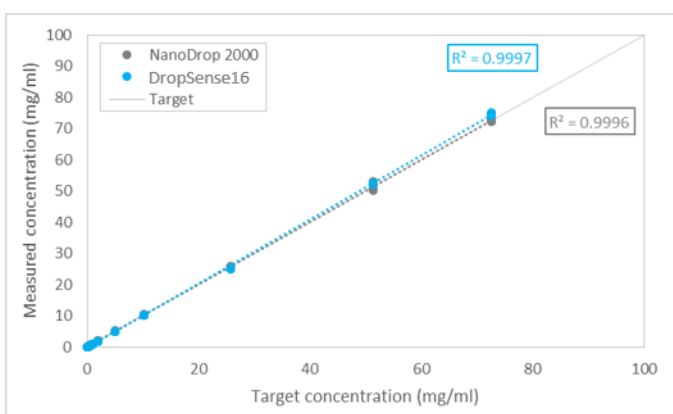


Fig 4. Triplicate measurements of a BSA dilution series (0.05 – 75 mg/ml) on NanoDrop 2000 vs. DropSense16.



Contact information

Trinean nv
Dulle Grietlaan 17/3
9050 Gentbrugge
Belgium

Tel: +32/9 272 75 35
Fax: +32/9 272 75 39
E-mail: info@trinean.com
www.trinean.com