

ProReveal

Fluorescence Protein Detection Test Technical Data Sheet

Studies have shown that protein detection methods currently used in Sterile Service Departments (SSDs) are inefficient in detecting residual proteins on cleaned re-useable surgical instruments. Studies indicate that residual protein on instruments can be directly related to potential disease risks including the transfer of vCJD via surgical procedures. Measuring residual protein on surgical instruments in microgram or nanogram quantities is now considered important and should be addressed with urgency.

Spray

Many of the common methods of protein detection rely on chemical reactions with the free amino groups within proteins to give coloured or fluorescent products. The ProReveal spray in the presence of protein and/or amino acid reacts to produce an improved and stable fluorophore product. This stable fluorophore emits fluorescence that is then detected under UV light. The light emitted from the reaction ranges from about 425 to 460 nm.

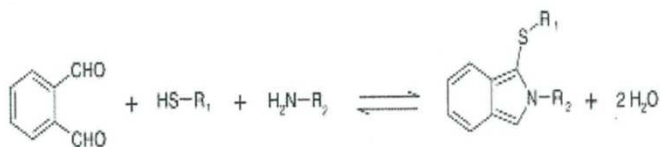


Figure 1 Reaction of ProReveal spray in the presence of a thiol to produce a fluorophore (2)

ProReveal Process

The whole process is quick and easy taking less than 5 minutes to give the result (**Figure 2**).

1. Place the instrument to be tested in the ProReveal viewer drawer on a sheet of the supplied non-fluorescent black paper. Spray the instrument covering all the top surface.
2. Close the drawer of the viewer.
3. ProReveal software has an in-built reaction time for the spray.

4. The software then activates the UV light.
5. ProReveal software then tells you if the instrument has passed or failed based on the recommended settings.

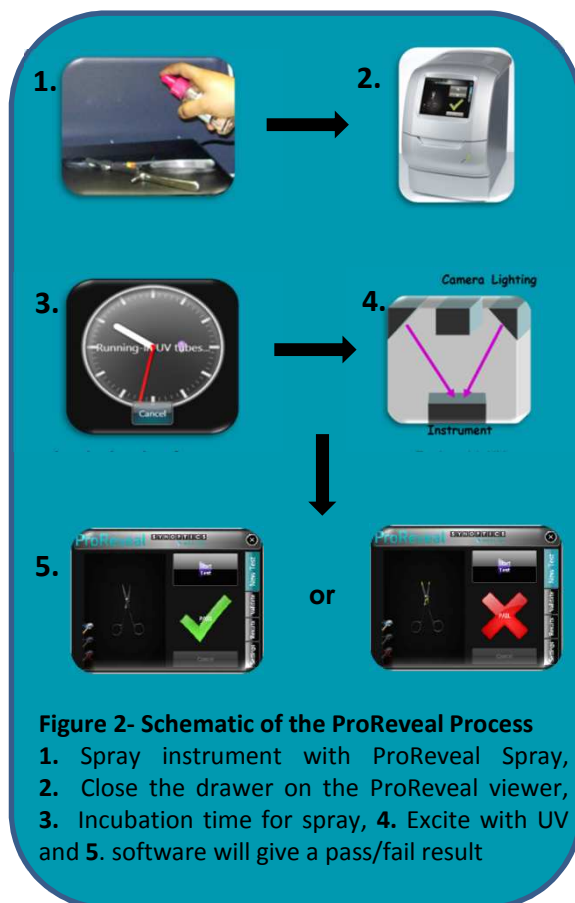


Figure 2- Schematic of the ProReveal Process
1. Spray instrument with ProReveal Spray,
2. Close the drawer on the ProReveal viewer,
3. Incubation time for spray, **4.** Excite with UV and **5.** software will give a pass/fail result

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Stability Data

To determine the stability of the ProReveal reagent inter-assays with Bovine Serum Albumin (BSA) were performed over a period of 6 months.

Standard BSA solutions were prepared and diluted to concentration from 0 to 100µg mL⁻¹. Blank measurements and standard assays with BSA were performed with freshly prepared and stored ProReveal spray stored both at room temperature and at 4°C for various periods of time.

ProReveal reagent was mixed with varying BSA concentrations. Reaction mixtures were left for 5 minutes at room temperature before measuring the fluorescence at 350nm excitation and 450nm emission.

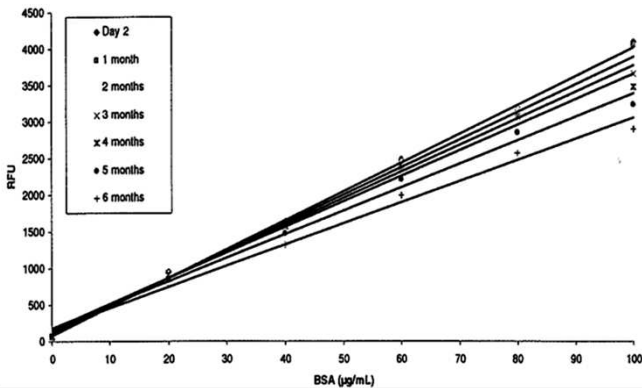


Figure 3- Stability and sensitivity of ProReveal spray reacted with BSA over a time period ⁽²⁾

Fluorescence was measured with a Hitachi F4500 spectrofluorimeter. The sensitivity of the ProReveal spray was stable at room temperature for 3 months.

Sensitivity data

Protein standard solutions (0-100µg/mL) containing BSA, Haemoglobin, Fibrinogen, Cytochrome-C, Globulin, Myoglobin were prepared in deionised water. Fluorescence measured with the spectrofluorimeter when using the ProReveal spray with each protein a linear response was achieved with all proteins tested (**Figure 4**).

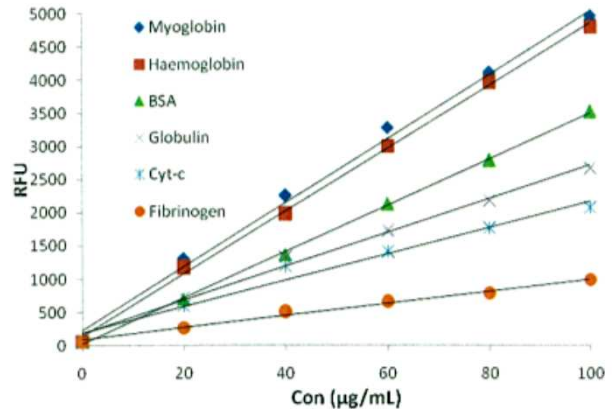


Figure 4- Sensitivity of ProReveal spray with various proteins in aqueous solution ⁽²⁾

Fluorescence measured in a Hitachi F4500 spectrofluorimeter.

References

- Hayden-Wright, A 2012, *Imaging system and associated method for detection of protein contamination*, UK Patent PCT/GB2011/051534.
- Perrett, D, Ruiz, ASC, Babu, NNK, 2012, *In-situ reagent for detection of proteins*, UK Patent PCT/GB2011/001244