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**U.S. Product Information & Quotations**

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# Asuryan

CHAUVIN ARNOUX
INDATECH

Pharma BioTech



## Detection and quantification of proteins in solution

***How to ensure reliable in-line measurement of high added-value molecules of interest with sometimes diverse compositions and concentrations? How to measure in-line the various high added-value molecules of interest?***

## Demanding regulations

The pharmaceutical industry develops proteins and other molecules with high biological activity, such as monoclonal antibodies, to expand and improve the more traditional arsenal of active pharmaceutical ingredients.

These biological materials are difficult to isolate and purify, which makes them more expensive to produce.

Their powerful biological activity provides optimum therapeutic activity at low doses. It is therefore essential to ensure the accuracy of the quantification and evaluation methods.



## Goals

In the field of biological therapies, it is important to optimize and secure the production phase of an isolated active ingredient by successive dilutions.

The aim is to produce a predictive model covering a wide range of proteins. The models used in the laboratory were developed on a model molecule: BSA (Bovine Serum Albumin).

Bovine serum albumin, a molecule resulting from the purification of a by-product from the cattle industry, is cheap and offers low reactivity, but nevertheless shares the main physical and chemical properties of proteins while maintaining significant safety.

## How?

The proteins, which are highly reactive molecules, are present in small quantities, so they require a spectroscopy method suitable for such low concentrations.

Due to its high sensitivity, UV spectroscopy is ideal for this type of measurement.

Furthermore, the adaptability of the Asuryan spectroscopic measurement system allows you to use different sensors.

These sensors adapt to the wide range of protein concentrations encountered in the various industries and in their different production phases.

# Performance for quantification of a protein in the dilution phase

Solutions with different concentrations of BSA [0.1 - 3mg/mL] were obtained by dilution of dehydrated albumin and then measured using two UV-VIS transflexion sensors with different optical trajectories (10mm and 20mm).

The data were then analyzed using the Eigenvector Research's PLS_toolbox and a linear regression model was constructed at an optimum wavelength characteristic of the proteins.

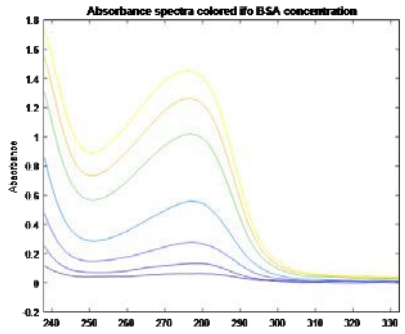


Figure 1: Example of absorbance spectra for 10mm optical trajectory

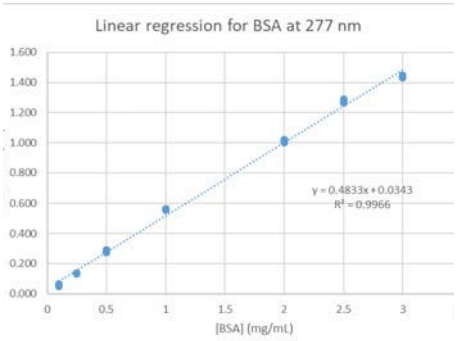


Figure 2: Linear regression model obtained by absorbance at 277nm

**FIGURE 1**
Increase in the absorbance according to the concentration; in particular, between 250 and 300 nm.

**FIGURE 2**

Model for protein quantification from 0.1 to 3mg/mL.

Asuryan can be used to obtain repeatable spectra and establish excellent models covering the whole range considered.

## Advantages of Asuryan

Asuryan offers an in-line measurement and inspection system which is ideal for therapeutic production:

- Better sensitivity and measurement accuracy at low concentrations than Raman spectroscopy
- Repeatability over time thanks to an internal reference measurement
- Simultaneous measurements at several points with different protein concentrations

This system offers a variety of sensors suitable for precise measurement on a wide range of therapeutic protein concentrations, making it an ideal tool for biopharmaceutical product development.



**INDATECH's teams will be delighted to answer any questions you may have by telephone: +33 4 80 78 01 40.**

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