

U-MEDICO INC.

Company Profile



Dynamic Image Analysis (DIA)



Analytical Ultracentrifugation (AUC)



Dynamic Light Scattering (DLS)



Size-Exclusion Chromatography (SEC)

**Aggregation Analysis
Stability Assessment
Formulation Development**



Interaction Analysis



Hydrogen/Deuterium Exchange Mass Spectrometry (HDX-MS)



Isothermal Titration Calorimetry (ITC)



Analytical Ultracentrifugation (AUC)

Overview

U-Medico Inc. was established in August, 2006 as a venture company originating from Osaka University, one of the top ranked universities in Japan. Our company provides contract research services and consulting in the field of protein biophysical characterization. In particular, we support biopharmaceutical formulation development using a variety of biophysical methods such as Analytical Ultracentrifugation, Mass Spectrometry, Size-Exclusion Chromatography, and Differential Scanning Calorimetry.

In addition to protein analysis, our in-depth knowledge and expertise enable us to perform characterization of wide range of molecules including peptides, nucleic acids, nanoparticles, carbohydrates, and more. We deliver tailored solutions that address your specific concerns.

Our clients

U-Medico Inc. has over 35 clients including leading global pharmaceutical, electronic, and chemical companies.



Contract research service

Analytical Ultracentrifugation (AUC)

- Size-distribution analysis by AUC sedimentation velocity (AUC-SV)
- Molecular shape and weight determination by AUC-SV
- Molecular weight determination by AUC sedimentation equilibrium (AUC-SE)
- Interaction analysis by AUC-SE and/or AUC-SV
- Size-distribution analysis in serum by AUC-SV with fluorescence detection system

Mass Spectrometry (MS)

- MS under denaturing conditions: Accurate molecular weight determination
- Native MS: Analysis of self-association in a native-like state

Hydrogen/Deuterium Exchange Mass Spectrometry (HDX-MS)

- Epitope mapping
- Protein-Protein interaction analysis
- Protein-ligands (drug) interaction analysis
- Steric constitution (3D) check -- 3D conformation similarity --

Dynamic light scattering (DLS)

- Size-distribution analysis
- Colloidal stability analysis (K_D)
- Determination of the temperature of aggregation onset (T_{agg})

Isothermal Titration Calorimetry (ITC): Interaction analysis

Size-Exclusion Chromatography (SEC)

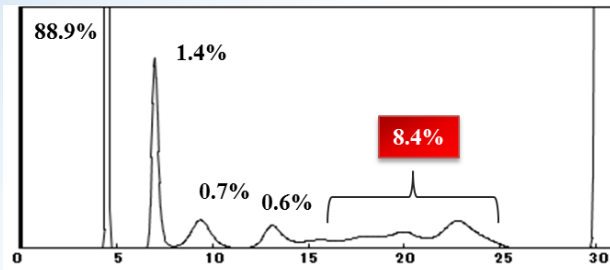
Density and Viscosity determination

Consulting service

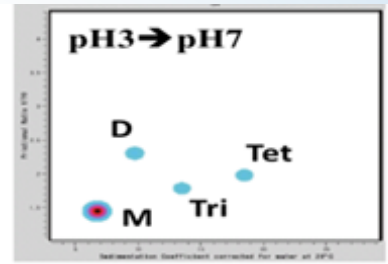
We offer consulting in the field of protein biophysical characterization. In particular, we support biopharmaceutical formulation development.

Examples of analyses

AUC

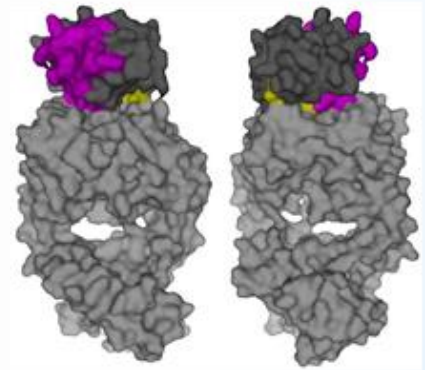
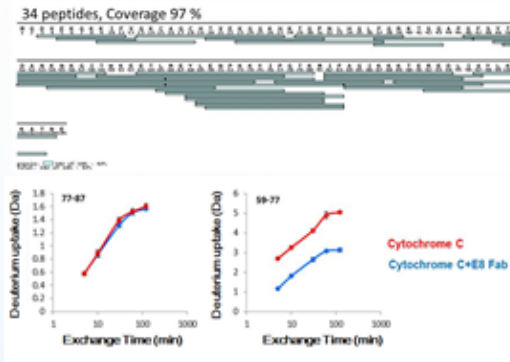


Aggregates in biopharmaceuticals can be quantified by AUC-SV. In this example, the amount of aggregates was 8.4%, which was underestimated by SEC



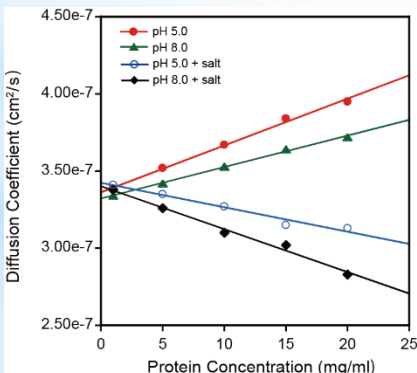
Hydrodynamic shapes of antibody monomer and oligomers can also be estimated from AUC-SV

HDX-MS

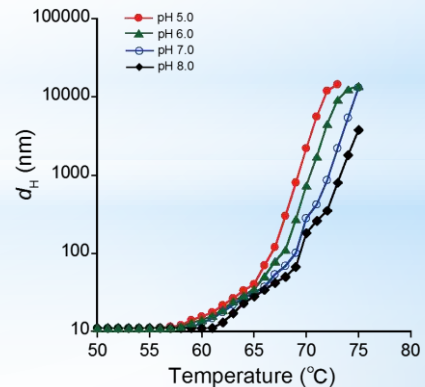


Exchange rate of amide proton to deuterium in peptide bond reflects an environment of an amino acid in a protein. In HDX-MS, binding region and conformational change upon protein-protein interaction or protein-low molecular compound can be identified by analyzing the exchange rates of peptides in a protein

DLS



In DLS, intermolecular interactions of proteins can be estimated based on the concentration dependence of diffusion coefficient.



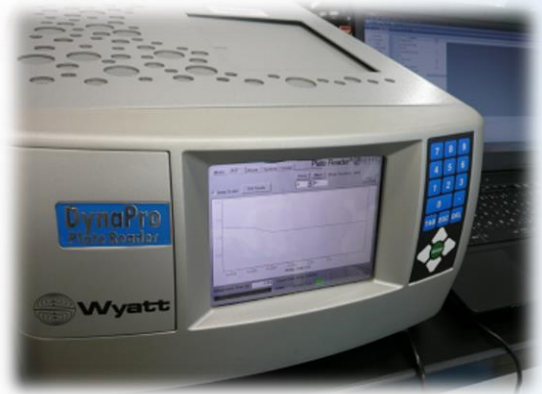
T_{agg} , the temperature at which the radius of protein increases due to formation of aggregates, can be estimated by DLS. Protein stability can be assessed by T_{agg} .

Our equipment

Beckman-Coulter
ProteomeLab XL-I AUC



Wyatt DynaPro Plate Reader



Waters HDX-MS system



Waters Alliance HPLC system
with UV/vis and Fluorescence
Detector



Publications

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