ORT_30 - Improve Biologics stability in solution understanding the colloidal and conformational stability

Daniel Maturana[1]*; Philipp Baaske[1]; Stefan Duhr[1].
[1]NanoTemper Technologies.

Introduction: Biologics are an important class of targets in drug discovery that are proven to be effective therapeutics. However, characterization of biologics and the associated workflows from early discovery to final formulation can often be very complex, time-consuming and lack accuracy and precision needed to appropriately monitor drug candidates.

Objective: Here we demonstrate how the new Prometheus PANTA by NanoTemper Technologies can be used to completely characterize the behavior of proteins in solution and predict the long-term stability of biologics using a combination of thermal unfolding, turbidity measurement, and colloidal stability. This new developed instrument has been design with 3 detectors to giving the capability to measure, simultaneously, the unfolding, turbidity, particle size and polydispersity index (PDI), without affecting the data quality.

Methodology: The new DLS detector developed by NanoTemper Technologies allows the instrument to measure particle size and polydispersity index through a thermal ramp, allowing to understand the changes on structure and aggregation in the folded to unfolded transition, or as standalone DLS system. The DLS detector have being designed to allow the fast measurement of particles from 0.5 nm to 2 µM with a very accurate and reproducible results.

Results: All these characteristics allows the Prometheus PANTA to work in formulation development focused in optimize stability through direct ligand interaction as well as increasing colloidal stability or, it can be even used as a control quality or in force degradation studies to check the functionality of your biologic in each step, from development to product filling.

Conclusion: This presentation will show how these 3 detectors work together to completely characterize the stability and functionality of biologics.

Keywords: Biologics; Formulation; Stability