Rapid Assessment of Aggregates in Protein-Based Pharmaceuticals

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**PURPOSE**
Aggregates can cause, or be caused by, deteriorating functional properties. Even low levels of aggregates can lead to a loss of efficacy and stability. Assays to detect aggregates can be used to track the efficacy of drugs over time, or to screen for aggregates in new drug formulations. The ProteoStat™ Thermal Shift Stability Assay provides a way to quickly assess aggregate formation and stability.

**METHODS**
As a model for the effects of temperature, humidity, pH, oxygen exposure, and physical stress, the ProteoStat™ dye is used to assess aggregate formation in a variety of proteins. The dye detects aggregates through changes in fluorescence intensity, which can be monitored using a simple temperature-controlled fluorimeter.

**RESULTS**
A homogenous fluorescence-based assay was developed that detects less than 1% aggregated protein in a variety of proteins. The assay can be performed over a broad pH range and is compatible with commonly used buffers and detergents. The ProteoStat™ dye was able to detect lower levels of protein aggregate (65°C trace).

**CONCLUSIONS**
The described assay facilitates understanding of the underlying mechanisms impacting protein stability, providing insights into the impact of environmental factors on protein stability. It is useful for assessing the impact of different storage conditions on protein stability, and for monitoring the formation of aggregates over time.

**REFERENCES**