

Denaturation of Albumin by Microcalorimetry

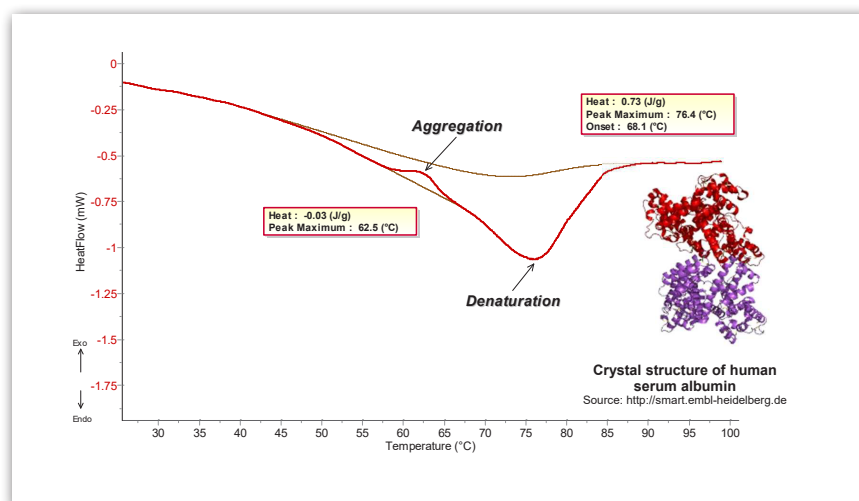
INTRODUCTION

Albumins are major proteins which are found in many food products such as egg white, milk or meat. These proteins are able to coagulate under the influence of the temperature. This thermal property is commonly used in food processes, such as in sugar refining to clarify the solutions or as emulsifying and gelling agents.

EXPERIMENT

- Sample: Albumin from egg
- Sample mass: 550 mg of 10% albumin in a 0.1M NaCl solution pH 5.
- Reference: 550 mg of 0.1M NaCl solution
- Type of cell: Batch cell

Experimental procedure: The temperature was programmed from 20 °C up to 95 °C at 1 °C/min.



RESULTS AND CONCLUSION

The denaturation of albumin corresponds to an endothermic event. It occurs at 68.1°C with a heat of 0.73 J/g of solution or 7.3 J/g of albumin.

The denaturation temperature (corresponding to the peak maximum) is measured at 76.4°C.

At the beginning of the denaturation, an overlaying exothermic event is detected. It is attributed to the partial aggregation of the protein.

INSTRUMENT

MICROCALVET ULTRA

-20 to 170°C



HIGHEST HEAT MEASUREMENT ACCURACY

3D sensor based on Peltier elements with Joule effect calibration.

MODIFIABLE TEMPERATURE CONDITIONS

for increased flexibility and replication of real life conditions.

DUAL SAMPLE TESTING

for greater throughput and a preserved accuracy even with large heat effects

CONVENIENT INTERCHANGEABLE CRUCIBLES AND CELLS

to perform even the most demanding experiments using one instrument :

- high pressure (1000bar) and high vacuum
- pressure measurement and control
- mixing experiment

EXTERNAL COUPLING CAPABILITY

designed to increase your research options including manometry, BET instrumentation, gas analyzers, humidity controllers and gas panels