

Albumin

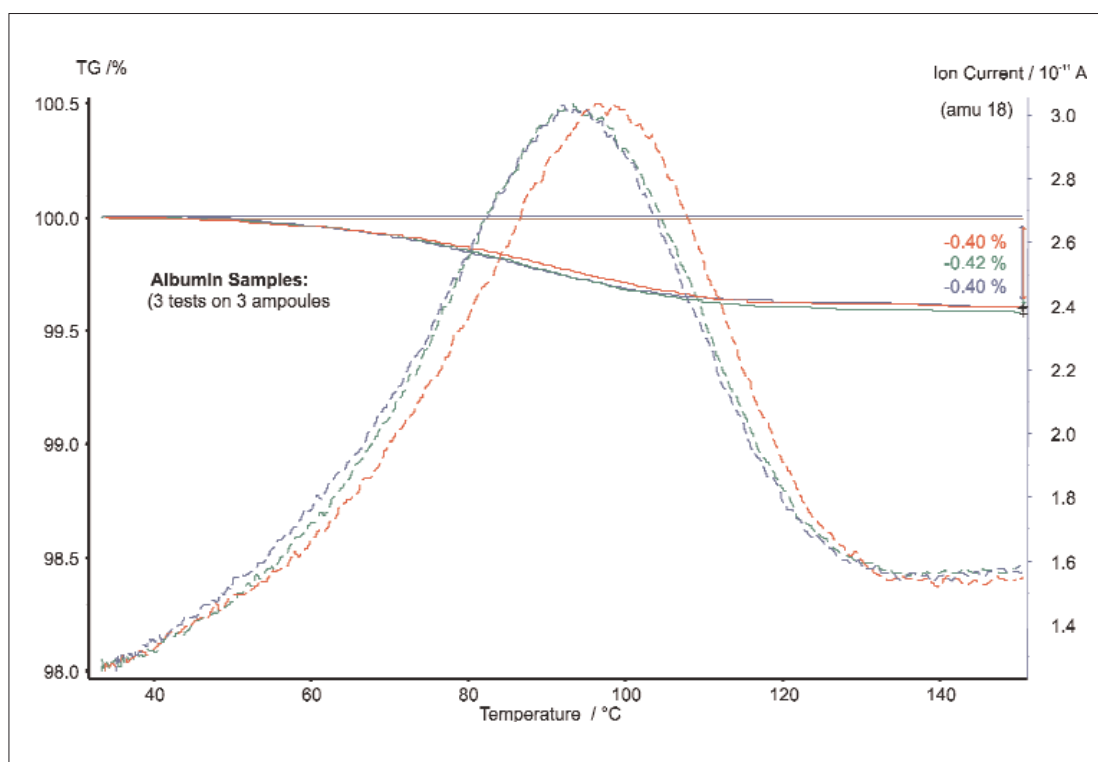
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Albumin generally refers to any protein with water solubility, which is moderately soluble in concentrated salt solutions, and experiences heat coagulation (protein denaturation). Substances containing albumin, such as egg white, are called albuminoids. The most wellknown type of albumin is the serum albumin in the blood, but there is also a storage protein ovalbumin in egg white and different storage albumins in the seeds of some plants. Serum albumin is the most abundant blood plasma protein and is produced in the liver and forms a large proportion of all plasma proteins. In general, thermal analysis and evolved gas analysis like mass spectroscopy are applied to biological substances and pharmaceuticals in order to study their thermal stability (relevant for storage), their moisture content and the purity of their ingredients. Structural transformations can furthermore be investigated.

Test Conditions:

Temperature range: RT ... 150°C
Heating/cooling rates: 10 K/min
Atmosphere: Helium at 70 ml/min

Sample mass: approx. 23 mg
Crucible: Pt
Sensor: TG type S



Results:

Three albumin samples were investigated using simultaneous thermogravimetry (TG) and mass spectroscopy (MS). Upon heating to 150°C, the samples experienced a mass loss of 0.40% which is due to the release of moisture. The mass spectrometer signals for mass number 18 which reflects the evolution of H₂O correlate well with the observed mass-loss steps. The results demonstrate in general microgram accuracy and reproducibility of both thermogravimetry and mass spectroscopy.

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