

Quality control of insulin

Application

Peter Kilz and Heinz Goetz

Insulin is a pancreas-formed polypeptide with a molecular weight of approximately 6000. A lack of insulin results in diabetes, which is treated by the injection of genetically engineered or pig insulin. An important tool for quality control analysis of such insulin is aqueous SEC.

Figure 1 shows an overlay of two insulin chromatograms. The "good insulin" was stored under adequate conditions while the "bad insulin" degradet due to improper storage conditions. In the "bad insulin" chromatogram we clearly see additional peaks eluting after 10 minutes retention time, while the insulin peak at a retention time of approximately six minutes has almost disappeared.



Overlay of two insulin chromatograms.

Conditions

Sample preparation Sample was dissolved in 1 mL eluent at 20 °C (concentration ~0.1 % w/w) Column PSS Suprema 100, 10 μm, 300 x 8 mm Mobile phase 0.1 M phosphate buffer, pH 7.0 Flow rate 1 mL/min Column compartment temperature 25 ° C Injection volume 100 μL Detector Variable wavelength detector, 278 nm



Equipment

Agilent 1100 Series GPC-SEC system

consisting of

- vacuum degasser for efficient degassing of the mobile phase
- isocratic pump with large solvent cabinet
- autosampler with single valve design
- thermostatted column compartment for precise column temperatures
- refractive index detector with automatic recycle valve
- ChemStation Plus with GPC-SEC data analysis software

Columns supplier: Polymer Standards Service, Mainz, Germany

Peter Kilz is Managing Director at Polymer Standards Service, Mainz, Germany. Heinz Goetz is an application chemist at Agilent Technologies, Waldbronn, Germany

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