Amylase / macroamylase detection

Macroamylase and is the cause of 8–12% of cases of hyperamylase (increased values of total serum α-amylase). The cause is a macrocomplex of the enzyme with high molecular weight serum proteins, especially with immunoglobulins IgA and IgG. A similar macrocomplex is formed by other enzymes, such as pancreatic lipase. The α-amylase macroform can be determined by gel filtration, electrophoresis, PEG precipitation or ELISA. Quantitative determination of the enzyme macroform ratio is most accurate using gel permeation chromatography on Sephadex® G-100. The separation takes place in a refrigerated box at 10 ° C on a 9 × 150 mm column at a flow rate of 3 ml / hour for 5 hours. The α-amylase activity in the individual fractions is determined enzymatically by a standard procedure with pNP blocked maltoheptaoside and the result is the ratio of both forms of the enzyme.

An important aspect for the detection of the macroamylase complex is the instability of the complex with immunoglobulins. The complexes dissociate during serum freezing and thawing, so macroamylase must be detected in a freshly collected serum sample.

Reference values: The macroform of the enzyme is not present under physiological conditions. The test result is given as a percentage of the amylase macroform calculated from the activities of the individual fractions. A positive result, a proof of the complex, is therefore a value> 0.

Links

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