

Tryptase - Risk marker for severe immediate-type allergic reactions

Background

Tryptase and tryptase precursors are excreted into the bloodstream from mast cells. The concentration of tryptase is a measure of the number of mast cells in the body (basal tryptase concentration). Mature tryptase is also secreted into the bloodstream during activation of mast cells by IgE-mediated or other mechanisms. The ImmunoCAP tryptase test measures the total tryptase concentration, that is, both inactive precursors and active (mature) β -tryptase.

Individual basal tryptase concentration

In healthy people the basal concentration is less than 11.4 $\mu\text{g/l}$. However, the basal concentration can also be up to 20 $\mu\text{g/l}$ in a healthy person. Every person has an individual basal concentration that is usually stable over time.

Clinical application of total tryptase

Risk marker for severe immediate-type allergic reactions

High tryptase concentrations are a risk factor with **insect toxin allergies** but also other immediate-type allergies (caveat: specific immunotherapy: SIT). Up to 25 % of patients with severe reactions have a high basal tryptase concentration.

Furthermore, high basal concentrations can also be a risk factor for severe reactions to anaesthetics and therapeutic procedures. Serum tryptase is therefore a risk marker for **anaesthetic and contrast agent hypersensitivities**.

In general, people with elevated basal tryptase concentrations (approx. > 12 $\mu\text{g/l}$) are considered to be at considerable risk of systemic type I allergic reactions and anaphylaxis. Concentrations between 12 and 20 $\mu\text{g/l}$ indicate an excessive mast cell accumulation which is not necessarily always due to mastocytosis. The elevated risk is particularly relevant for people with a known history of systemic type I allergies.

Markers for mastocytosis

Mastocytosis is a relatively rare disease which is characterised by accumulations of mast cells in the skin or in the internal organs. Permanently elevated or rising serum tryptase concentrations reflect this increased, abnormal mast cell accumulation.

In patients with systemic mastocytosis, the tryptase concentrations are generally permanently above 20 $\mu\text{g/l}$ and can reach values of more than 1000 $\mu\text{g/l}$.

Systemic mastocytosis is a risk factor for anaphylactic reactions. This is particularly true for reactions to insect stings and medications.

Confirmation of an anaphylactic reaction

The sudden increase in the serum tryptase concentration with subsequent fall within 48 hours indicates mast cell activation and is an aid to confirming an anaphylactic reaction. The peak values can range from 20 $\mu\text{g/l}$ to over 200 $\mu\text{g/l}$.

In forensics, elevated post-mortem tryptase is a strict indicator of anaphylaxis-related cause of death.

Confirmation with positive provocation testing for urticaria

Various studies have shown that measurement before and after allergen provocation can be helpful in verifying the responsible triggers.

Material

1 ml Serum

Sample receipt within 24 hrs has to be ensured. Within the Berlin city area, we offer a courier service (+49 (0)30 7701-250). For collections beyond Berlin, please contact our complimentary courier service (+49 (0)30 77001-450).

Reference range < 11,4 $\mu\text{g/l}$

Invoicing

The costs for the test are 43.72 €.

Literature

- Lawrence et al. (1994): Development of a New, More Sensitive Immunoassay for Human Tryptase: Use in Systemic Anaphylaxis. J of Clinical Immunology.
- Ludolph-Hauser et al. (2001): Constitutively raised serum concentrations of mast-cell tryptase and severe anaphylactic reactions to Hymenoptera stings. Lancet.

Do you have questions? Our serviceteam will be happy to support you: +49 (0)30 770 01-220.