The basophil degranulation test (also known as basophil activation test [BAT] or CAST test) reproduces the allergic immediate type reaction in the test tube after addition of the suspected allergen to basophil granulocytes enriched from the patient blood. In case of allergic sensitisation, released leukotrienes are detected. The test thus resembles the reaction in the prick test but with the advantage of being independent of antihistamine ingestion, dermatographic urticaria and other factors that influence skin tests. There is also no risk of triggering anaphylaxis with an in vitro test.

The procedure involves the following steps:

1. Isolation of the basophil granulocytes from EDTA or heparin blood collected from the patient
2. Priming of the basophils with Interleukin 3
3. Stimulation with the suspected allergen extracts, native materials or (new) recombinant allergen components
4. Measurement of the histamine-associated allergy mediators (leukotrienes) released in response with existing sensitisation
5. An increase in the leukotriene release > 200 pg/ml compared to baseline is considered evidence of an allergic sensitisation.

Advantages of the BDT

Unlike IgE detection in the CAP test, the BDT also detects basophil-bound allergen-specific IgE antibodies and is therefore very sensitive.

As a classic 'in vitro provocation test' the BDT is also suitable for the detection of immediate type hypersensitivity reactions not mediated by IgE (pseudoallergies/idiomsynracies to some medications, work-place and environmental allergens, food additives and dyes).

Regarding sensitivity and specificity, the BDT has proven to be clearly superior in our laboratory compared to other in vitro provocation tests such as the histamine release test or the CD63 test.

Applications for the BDT test

Detection of IgE-mediated type I sensitisations:

1. To allergen extracts with negative or questionable specific IgE in the CAP test or prick test despite strong clinical suspicion.

The classic applications are:

- hymenoptera toxins (bees, wasps, hornets)
- house dust and flour mite allergens
- moulds
- animal dander (dog and cat hair)
- food
- α-amylase, latex, formaldehyde, etc.

2. To allergens that are not available for automated IgE measurement

- many medications (primarily NSAID)
- acrylates and other plastic components
- animal dander, yeasts, flour dust
- varnishes and resins, e.g., in the building industry
- latex gloves, disinfectants
- perfumes, solvents, biocides, etc.

The advantage of the BDT is that it can also be carried out on toxic and carcinogenic native materials because there is no contamination of the patient using this laboratory test. The native materials must be sent to the laboratory together with the blood sample.

3. To food dyes and food additives (17 substances in 4 screening groups, see reverse).

On the reverse you will find a list of the validated allergens available in the laboratory.

For allergens not listed an allergen sample (for medications tablet or ampoule and for other materials about 2 g or 0.5 ml of substance) must be sent together with the blood sample.

Material

2 ml fresh EDTA or heparin blood for each allergen

Sample receipt within 24 hrs has to be ensured. The sample should be stored and transported at room temperature.

The laboratory request is done using the request form ‘Special immunodiagnostics’ [Analysis 200] or on a referral form as ‘Basophil degranulation test for _________.

Costs

The costs are 27.98 € per allergen with an additional one time fee of 23.31 € for the cell preparation.

Do you have questions? Our serviceteam will be happy to support you: +49 (0)30 770 01-220.
The following allergens are always in stock as standard test allergens in the laboratory. For allergens not listed here, there is the option of sending in a sample which can be tested directly in the BDT (BDT special allergen).

### Medications

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<th>Group</th>
<th>Example</th>
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