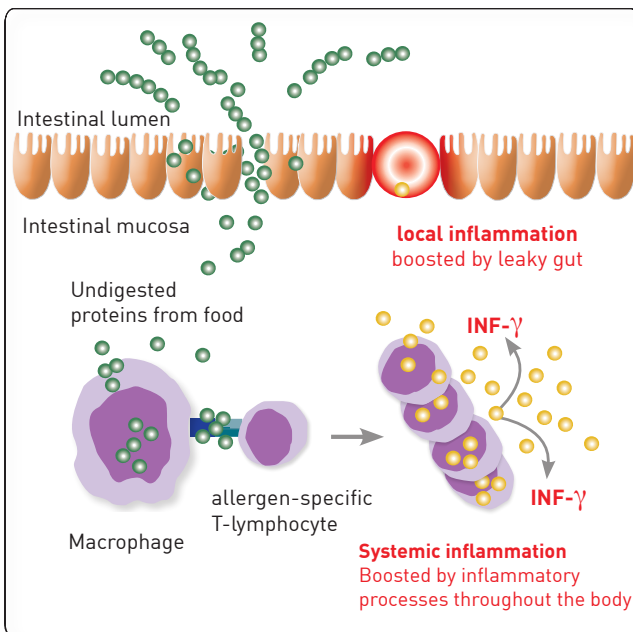


Proof of type IV sensitisations against different types of food

Next to IgE-mediated allergies, there are also non-IgE-mediated allergies against food. These are caused by allergen-specific T-lymphocytes that react to protein originating in food. Often, symptoms occur 24 to 48 hours after ingestion, which renders the diagnosis difficult. Symptoms vary dramatically. Gastrointestinal inflammatory symptoms (leaky gut), but also eczema of the skin, as well as worsening of myalgic or arthritis' symptoms are common.



Performing a **lymphocyte transformation test (LTT)** to detect sensitisations against proteins from food has become possible thanks to the administration of LPS-free allergens, which increases both specificity and sensitivity.

The LTT is recommended if:

- an allergy Typ I has been ruled out
- symptoms occur after several hours and remain for days
- clinical manifestation that does not correspond to the classic symptoms of mast cell activation (type I allergy), such as eczema of the skin, myalgia or arthritic complaints.

Prior to the test, and depending on the anamnesis, non-allergic intolerances, such as celiac disease, lactose intolerance, or histamine intolerance, should be ruled out.

Testing of individual allergens in the LTT TOP 25 foods constitutes the preferred method

It took years of experience from the administration of LTT food screen 75 to choose those 25 allergens that had been tested positive most frequently. The results lead to the **LTT TOP 25 foods** design.

By default, those 25 allergens are now tested as individual allergens in the LTT. When compared to the earlier group screening test, it comes as an advantage that retests are not necessary. This in fact not only decreases costs but also renders a second blood sample collection unnecessary. Testing individual allergens is in addition more sensitive than testing food mixes. According to statistic results, ca. 94 % of food-related type IV sensitisations can be detected.

In order to guarantee the inclusion of all suspected allergens according to the anamnesis, up to 3 additional allergens can be requested without further costs (also valid for special profiles).

Foods included in the **LTT TOP 25 foods** can be found in the following sample medical report.

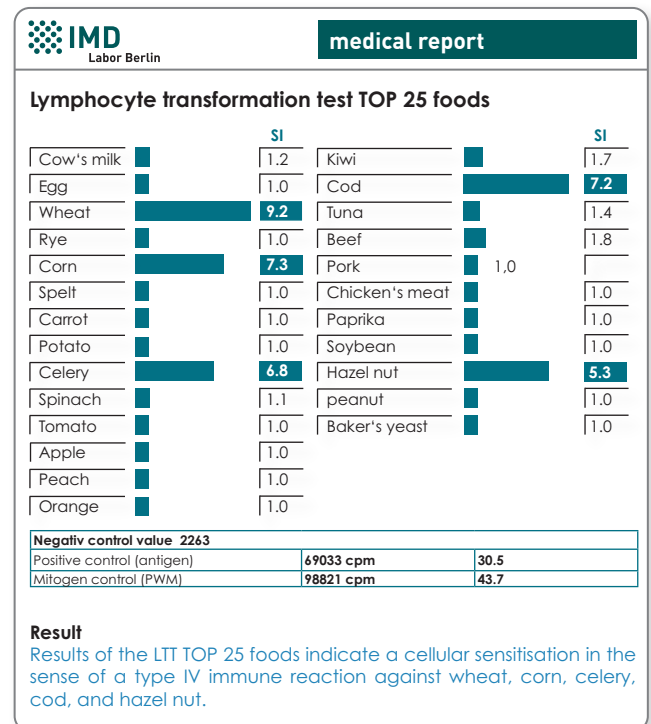


Fig. 1 Sample medical report LTT TOP 25 foods

Special profiles are available

The administration of food profiles **LTT TOP II** and **LTT TOP III** broadens the spectrum of the allergens that are to be tested. Over 8000 analyses that we administered in our institute informed the choices made regarding the allergens' selection to profiles II to III. An additional food profile especially suitable for vegetarians (**LTT TOP 25 vegetarian**) and a vegan food profile (**LTT TOP 25 vegan**) are also available.

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

Food profiles entail:

LTT TOP II foods	
Barley	Halibut
Oat	Salmon
Pea	Crayfish
Cauliflower	Sole
Asparagus	Turkey
Onion	Goose meat
Pear	Lamb meat
Strawberry	Coriander
Grapefruit	Garlic
Lemon	Walnut
Pineapple	Pistachio
Mandarin	Baker's yeast
Avocado	

LTT TOP III foods	
Buckwheat flour	Lobster
Hops	Prawn
Rice	Duck meat
Lentils	Vanilla
Chickpea	Aniseed
Artischock	Cinnamon
Grape	Pepper
Banana	Brazil nut
Eel	Cashew
Trout	Coffee bean
Herring	Cocoa bean
Sardine	Black tea
Eggplant	

LTT TOP 25 vegetarian	
Cow's milk	Paprika
Egg	Soye
Wheat	Tofu
Rye	Apple
Corn	Peach
Spelt	Orange
Millet	Kiwi
Amaranth	Avocado
Carrot	Coconut milk
Potato	Peanut
Celery	Hazelnut
Spinach	Baker's yeast
Tomato	

LTT TOP 25 vegan	
Egg vegan	Quinoa
Seitan	Amaranth
Falafel	Couscous
Tofu	Corn
Millet	Hemp flour
Avocado	Agar
Tempeh	Bulgur
Polenta	Wheat
Gluten	Veggie scampi
Coconut milk	Soye
Carrot	Banana
Almonds	Vegan cheese
Eggplant	

Systemic nickel allergies may manifest as food intolerances

In Germany, ca. 17 % of women and 8 % of men suffer from type-IV nickel sensitisation. 20-30 % of these patients do not react after dermal contact (context allergies against nickel), but also after contact with nickel that has been absorbed from food via the colon. In addition, there are patients that do not possess a contact allergy, but still react systemically after nickel contact at the intestinal mucosa. Studies have shown intensified diseases in cases with atopic dermatitis, skin eczema, urticaria, chronic inflammatory diseases, such as rheumatism, other autoimmune diseases, and chronic fatigue syndrome (CFS).

In cases with known or suspected nickel allergy, the LTT should be used to test for possible systemic sensitisations. In cases with positive results, a diet reduced in nickel is recommended – we will provide suitable dietary information in respective cases.

Material

LTT TOP 25 foods

LTT TOP II foods

LTT TOP III foods

LTT TOP 25 vegetarian

LTT TOP 25 vegan

30 ml heparin blood plus 5 ml serum for each profile

Nickel LTT (single): 10 ml heparin blood and 5 ml serum

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

Invoicing

The costs for each complete profile are 156.19 €. The nickel LTT is 56.53 €.

Literature

- Agata H., et al. Evaluation of lymphocyte proliferative responses to food antigens with regard to age and food-specific IgE antibodies in food-sensitive atopic dermatitis. *J Investig Allergol Clin Immunol.* 1993;3:174-177.
- Fukutomi, O. et al. Timing of onset of allergic symptoms as a response to a double-blind, placebo-controlled food challenge in patients with food allergy combined with a radioallergosorbent test and the evaluation of proliferative lymphocyte responses. *Int Arch Allergy Immunol.* 1994;104(4):352-357.
- Kondo N. et al. Lymphocyte responses to food antigens in patients with atopic dermatitis who are sensitive to foods. *J Allergy Clin Immunol.* 1990;86:253-260.
- Reekers R. et al. The role of circulating food antigenspecific lymphocytes in food allergic children with atopic dermatitis. *Br J Dermatol.* 1996;135:935-941.
- Werfel T et al. Milk-responsive atopic dermatitis is associated with a casein-specific lymphocyte response in adolescent and adult patients. *J Allergy Clin Immunol.* 1997;99:124-133.
- Ivana Setinova et al. Diagnostic value of the lymphocyte transformation test for non-IgE mediated food allergy Poster presentation from Food Allergy and Anaphylaxis Meeting 2014, Dublin
- Kimura M. Usefulness of lymphocyte stimulation test for the diagnosis of intestinal cow's milk allergy in infants. *Int Arch Allergy Immunol.* 2012;157:58-64.