Everyone can develop metal sensitizations as there are lots of metals in our environment. Metal exposures are extreme in case of dental fillings and implants, dental alloys, joint prosthesis and similar, but also in jewellery, coins and cosmetic products or certain drugs and vaccines. As soon as a sensitization took place, metals may be the cause of many complaints. Generally these are not IgE-mediated allergic reactions, but so called type-IV immune reactions, which may finally lead to T-lymphoblast proliferation with effector cell and cytokine development and thus cause complaints.

The most frequent triggering metal is nickel, but also cadmium, gold, palladium, mercury (amalgam) and many others may provoke metal sensitizations.

So far metal sensitizations were diagnosed by epicutaneous tests. This test, however, exclusively detects contact allergies. Other allergy types (e.g. type-IV immune reactions) cannot be safely diagnosed. This leads to a high share of false negative results in case of epicutaneous tests. In addition the used test substances may lead to sensitization of patients during the test.

Also the immunological RAST tests for the detection of IgE antibodies cannot provide proof of metal sensitizations as no antibodies are involved.

Therefore biovis recommends the MELISA®-Test – a modified lymphocyte transformation test – for reliable diagnosis of metal sensitizations.

For the MELISA test lymphocytes are isolated from patient blood and co-cultivated together with the respective test metals. Finally – with the aid of H3-marked thymidine – the cell cleavage (DNA-synthesis) of a possible lymphoblast proliferation is made visible in the culture.

### MELISA®-Test
- objective
- reproducible
- sensitive
- specific
- not sensitising

### Metal sensitizations may be the reason for following diseases:

**Local Symptoms:**
- Contact dermatitis, rashes, cutaneous or oral lesions

**Systemic Symptoms:**
- Headaches, migraine, neuralgia, muscle pains, depressive moods, sleeping disorders, arthralgia, paraesthesia, tiredness, “Flu-similar” symptoms and autoimmune phenomena.

**Combinations of these symptoms are possible.**

Furthermore the participation of metal sensitizations are discussed in case of multiple sclerosis, amyotrophic lateral sclerosis, chronic fatigue syndrome (CFS), Fibromyalgia, multiple chemical sensitivity (MCS) and autism.
By comparing the measurable integration of marked thymidine in the cells with the culture of incubated possible metal allergens and a control culture without metal treatment, one can objectively and reproducibly (reproduction factor 95 %) calculate a so-called stimulation index. This reliably shows to what extent proliferation took place and if metal sensitization exists. In addition morphological controls of the culture are carried out.

**Indications MELISA®-Test:**

- Suspected metal sensitization with local and/or uncharacteristic symptoms
- Determination/exclusion of type-IV-hypersensitivity before insertion of dental implants, prosthesis or similar.
- Determination/exclusion of type-IV immune reactions in case of respective intolerance symptoms after insertion of dental implants, prosthesis or similar.
- Determination/exclusion of type-IV-immune reactions against existing dental agents in case of autoimmune diseases

**Required Material:**

50 – 70 ml CPDA whole blood (depending on requested profile)
Please store samples at room temperature and ship as soon as possible (24 hours, express mail respectively sample pick-up).

After approximately 8 – 10 days you will receive the test results with detailed explanations.

The costs of the different test combinations can be found on our combined Request Form/Price List. Individual tests and tests of special dental material samples are possible.

**The MELISA®-Test is possible for:**
- Aluminium (Al)
- Beryllium (Be)
- Lead (Pb)
- Cadmium (Cd)
- Calcium / Titan alloy (CaTi)
- Chromium (Cr)
- Cobalt (Co)
- Ethyl-mercury / Thiomersal (EtHg)
- Gold (Au),
- Indium (In)
- Iridium (Ir)
- Copper (Cu)
- Methyl methacrylat (MMA)
- Methyl-Mercury (MeHg)
- Molybdenium (Mo)
- Nickel (Ni)
- Palladium (Pd)
- Phenyl-Mercury (PhHg)
- Platinum (Pt)
- Mercury-Chloride (HgCl)
- Ruthenium (Ru)
- Silver (Ag)
- Titan (Ti)
- Titan-Oxide (TiO2)
- Vanadium (V)
- Tin (Sn)
- Zirconium Oxide (ZrO2)
  among others in combination, dental implants or individual profiles

**Do you have further questions? Please call us! We will gladly inform you.**

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