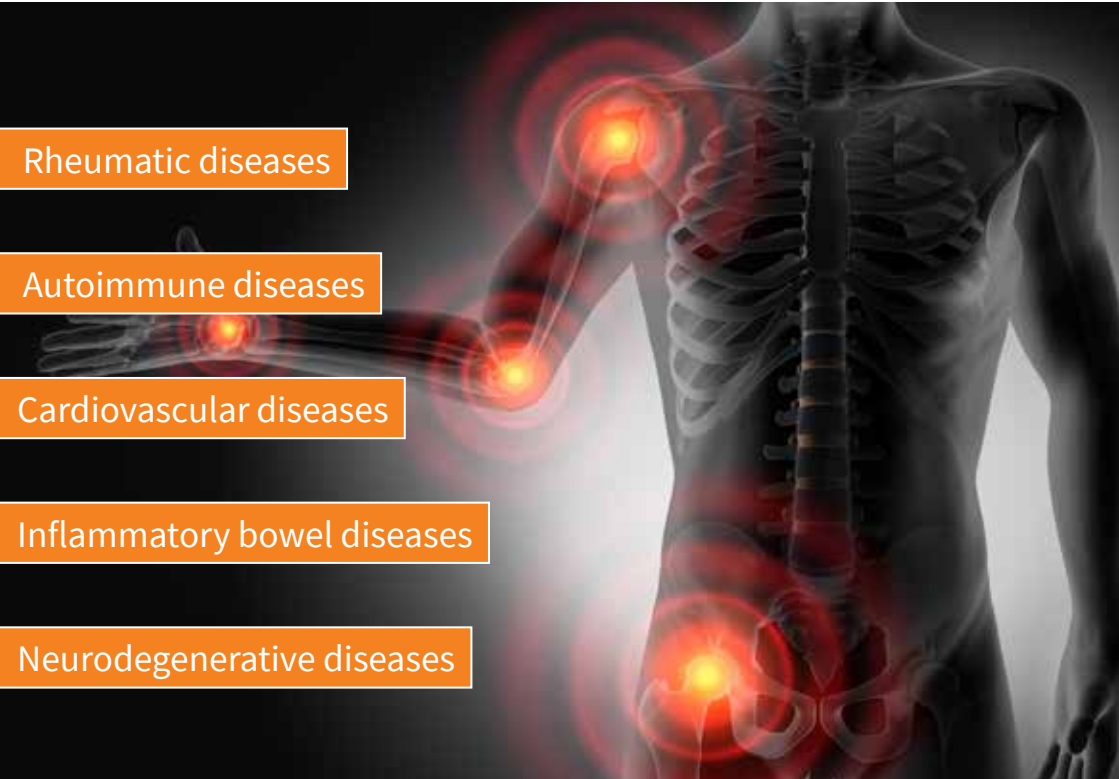




Micro-immunotherapy
International Medical Experience

Micro-immunotherapy & Inflammation



Rheumatic diseases

Autoimmune diseases

Cardiovascular diseases

Inflammatory bowel diseases

Neurodegenerative diseases

Targeted counteraction of inflammation

We have all experienced it: the day after being pricked with a rose or stepping on a rusty nail, the affected area starts to hurt, it gets thick, red and warm. These are all signs of inflammation. We know the same effect from the reddened nose during a cold and the swollen tonsils in sore throat. Inflammation, if very pronounced, may even come along with fever. It is a normal reaction of the body's own defence system aimed at protecting the organism from external disruptive factors (e.g. pathogens) and preventing tissue damage.

Inflammation can also occur inside our body. For example, in our joints if the cartilage layer gets hurt due to either malposition, inappropriate weight bearing, wear or autoimmune processes. In these cases the immune system also tries to eliminate the disruption and repair the tissue.

Inflammation is thus a desirable defence reaction of the organism. However, in some cases the reaction can run out of control and harm the body. In this brochure, you will find the different types and causes for inflammatory processes explained and learn how micro-immunotherapy can help in excessive inflammation.

Inflammation: Friend or foe?

The useful side of the coin

In order to understand the two sides of inflammation, we need to go into a little more detail.

As soon as immune cells detect a harmful agent, they activate and release proinflammatory messenger substances. This triggers important processes:

- The permeability of the blood vessels increases.
- More blood reaches the affected area.
- Further immune cells are recruited to the affected area to fight the disruptive factor.

Once the inflammation has fulfilled its purpose, it needs to end so that homeostasis can be reestablished. Immune cells release anti-inflammatory messenger substances, whereby inflammation recedes, the tissue is repaired and destroyed cells are eliminated.

The flip side of the coin

Unfortunately, this reaction does not always run smoothly, particularly if there is an imbalance between proinflammatory and anti-inflammatory messenger substances. Dysfunctions of the body's own defence system can turn up as a result.

If proinflammatory messenger substances are released in too large amounts, inflammation can run out of control, leading to an excessive reaction of the immune system and, eventually, tissue damage. This has been observed in severe COVID-19 or in autoimmune diseases.

It can also be the case that the inflammatory process does not resolve adequately due to insufficient compensating antiinflammatory substances.

If the organism is constantly exposed to several environmental and lifestyle immune stressors (Fig. 1), proinflammatory messenger substances can be released continuously in small amounts.

All of these factors play a part in inflammation becoming permanent or chronic, and thus pose a real danger to health (Fig. 2)



Silent inflammation - a particular type of chronic inflammation:

Sometimes inflammation smoulders unnoticed in the organism (often for years) and is not always detectable through classical laboratory parameters. This is known as silent inflammation and its most common causes are adipositas or chronic stress.

Causes and effects of chronic or silent inflammation

Some people are genetically predisposed to developing chronic inflammation. However, in the majority of cases, environmental or lifestyle factors are also involved. It is known that infections, environmental toxins, chronic stress and sleep disorders burden the immune system, favouring the release of proinflammatory messenger substances. Moreover, malnutrition and lack of exercise, which are often associated with obesity and alterations of the gut microbiome (dysbiosis) or the gut barrier, can trigger or worsen chronic inflammation³ (Fig. 1).

For example, if the gut barrier becomes permeable or leaky, harmful substances can enter the bloodstream. As a consequence, the immune system activates to eliminate the disrupting factors. As long as the gut barrier stays unrepaired, the immune system is permanently activated, whereby the initially useful inflammation may persist for years and harm the body.

	Genetics		Malnutrition
	Infections		Lack of exercise
	Environmental toxins		Disorders of the gut microbiota / barrier
	Chronic stress		Obesity
	Sleep disorders		

Fig. 1: Triggers or worsening factors in chronic inflammation

As chronic inflammation is associated with various diseases, it is important to detect them in time, addressing possible risk factors and thus reestablishing the balance of the immune system as part of an integrated treatment plan^{1,3}.

	Rheumatic disorders (e.g. rheumatoid arthritis, arthrosis)		Cancer (e.g. breast cancer, colon cancer)
	Autoimmune diseases (e.g. multiple sclerosis, Hashimoto's thyroiditis, systemic lupus erythematosus)		Metabolic and cardiovascular diseases (e.g. diabetes type 2, metabolic syndrome, atherosclerosis)
	Inflammatory bowel diseases (e.g. Crohn's, ulcerative colitis, irritable bowel syndrome)		Psychoneurological disorders (e.g. depression)
	Skin diseases (e.g. psoriasis, dermatitis, urticaria)		Neurodegenerative diseases (e.g. Parkinson's, Alzheimer's, dementia)

Fig. 2: Diseases associated with chronic or silent inflammation

The micro-immunotherapy approach

Micro-immunotherapy is a low-dose immunotherapy that mimics the natural functioning of the immune system. It has proven to be of great help in counterbalancing immune disorders such as chronic inflammation.

The release of proinflammatory immune messenger substances is counteracted through the use of cytokines and other immune messenger substances in low doses, thereby favouring the activity of anti-inflammatory substances. Micro-immunotherapy thus contributes to dampening inflammation, limiting its symptoms and consequences and bringing the immune system back into balance.

Micro-immunotherapy formulas can be used for the treatment of inflammation in musculoskeletal (such as arthrosis, rheumatoid arthritis), intestinal (chronic inflammatory bowel diseases), thyroid gland (e.g. Hashimoto's), psychoneurological (e.g. depression) and neurodegenerative (e.g. Alzheimer's, Parkinson's), metabolic (e.g. diabetes) and cardiovascular disorders. Moreover, micro-immunotherapy offers various possibilities to address the triggers or worsening factors in chronic inflammation, including the formulas used in bacterial or virus infections. There are also micro-immunotherapy formulas to counteract the proinflammatory effect of stress and depression.

Micro-immunotherapy formulas are suitable for all age groups and easily taken sublingually. Given the low doses, they are well tolerated and compatible with other treatments such as analgesics or antirheumatics (Fig. 3).

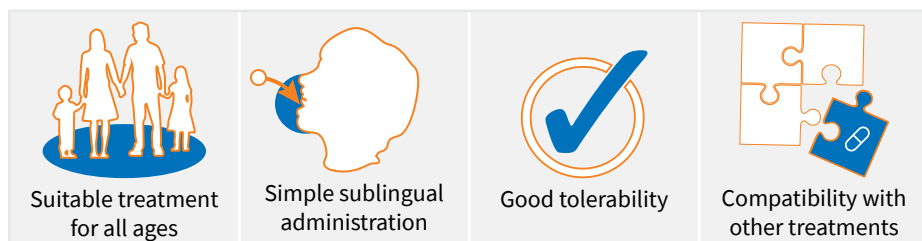


Fig. 3: Benefits of micro-immunotherapy

Studies on the anti-inflammatory effect of micro-immunotherapy

The anti-inflammatory effect of immune messenger substances in low doses has been proven on numerous occasions.

A study on in vitro cell cultures showed that micro-immunotherapy reduces the release of proinflammatory cytokines^{4,5}. Another study showed a decrease in proinflammatory substances in the plasma⁶. Moreover, an alleviation of rheumatoid arthritis' characteristic symptoms (cartilage degradation, swelling) was observed. The authors conclude that micro-immunotherapy is an interesting approach to regulating the immune system on multiple levels in inflammatory diseases such as rheumatoid arthritis⁶.

Conclusion

Inflammation is a two-sided coin: it is necessary to protect the body from harmful agents and repair the damaged tissue; however, if the inflammatory response persists over a long period of time, it can become detrimental to the body and favour the onset of various diseases.

Micro-immunotherapy re-establishes the balance between proinflammatory and anti-inflammatory messenger substances in a gentle, targeted and sustainable way, thus contributing to bringing excessive inflammatory reactions under control.

Literature

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