

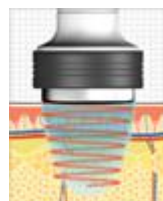
## CRYOJETT

Thanks to the combination of methods **Thermocryolipide** and **cryo-electrophoresis**, device **Cryo JETT** is the most effective and the least invasive technology for subcutaneous fat reduction available on the market. Thanks to in-depth working and targeted treatment, it achieves better results than other presently used technologies. It is a device that enables the user to provide non-invasive lipolysis by freezing fat cells as well as it provides face skin treatment and rejuvenation.



**Cryo JETT** – it is the most flexible skin treatment method. Active ingredients are transmitted to various skin layers by pulsating current. Thanks to this method, 80-90% of active ingredients is transmitted into inner layers of skin

It is used effectively in treatment of wrinkles, acne, uneven pigmentation, rosacea, sensitive skin, cellulite, striae, fat pads, saggy and dehydrated skin.



### **The Method of Thermocryolipide**

Fast evolving aesthetic medicine is looking for new ways how to correct figure, trying to achieve the highest efficiency, non invasivity and the shortest working time possible. The base of many lipolytic methods is destruction of fat cells.

This method, widely used by dermathologists to cure undesirable objects in human body, is now successfully taken over by major aesthetic medicine clinics all over the world. It also becomes popular among clients who want to shape their body and get rid of undesirable fat.

Each biological process or chemical reaction has a temperature. In every biological process or chemical reaction, there is a temperature, in which the process functions the best way it can – so called optimum temperature. Similarly, we can describe minimal and maximal temperature in which the working of the process is possible. Nevertheless, in both ways, the reaction is not as intensive as it is in optimum temperature. The same principle can be used in an organism as a whole, as well as on the level of its cells. The human body cells have their metabolic optimum in approximately 36-37°C. Both increase and decrease of the temperature leads to worse functioning of metabolism. If maximal or minimal temperature is exceeded, metabolism does not function or its functioning is wrong. It is partly due to chemical compounds in metabolic processes which change their reactional character depending on temperature.

By means of cooling and heating the human body, cells of human body can be harmed, but, in specific cases, also healed.



## Hyperthermia

The increased temperature can be used either to increase the temperature of the body as whole or to targeted increase of temperature. A physiological example of such a process is increasing of basal temperature from 36,6 °C if there is an inflammation. This increase might be useful from the point of view of immunity system, yet, this is true only if the temperature does not exceed 39°C, which may lead to harmful effect of the temperature increase. In case of further temperature increase, the damage speeds up. In case of very high temperatures, there appears a danger of burning.

Taking into consideration heating of organism tissues, the important role is played also by the tissue's ability of thermoregulation. This depends firstly on the amount of substances with higher or lower specific heat capacity (eg. water or fat), and secondly on vascularisation (blood supply) of the tissue. Thus, it is possible to tell which tissue is capable of thermoregulation of the organism or its parts to a higher or lower extend. Skin can be stated as a typical example, as its vessels can increase or decrease their blood flow capacity and therefore they can regulate transportation of the heat from tissues. When we are in cold environment, the vessels in terminal parts of upper limbs narrow, they decrease the blood flow capacity in hands and subsequently they decrease loss of temperature. The hands therefore get cold and their temperature does not exceed 36°C.

Another example of a tissue with thermoregulation is subcutaneous fat tissues. It has relatively high ability of thermal isolation between skin, subcutaneous structures and organs. It is due to high percentage of fat substances and also due to a different vascularisation from the one of, for example, skin (the lower one). On the basis of the mentioned differences between thermal characteristics of tissues, we can demonstrate different effects of heat on various tissues. If skin is in touch with the source of heat, skin cells have high ability of vascularisation, which supplies the part of body with blood with temperature of approximately 36,6°C and therefore, it cools skin if the heat factor is of a higher temperature than the heat source.

Subcutaneous fat tissues with lower vascular ability is thus exposed to relatively higher temperatures than skin cells covering it, as they are permanently cooled by circulating blood. It can lead to various effects on subcutaneous fat cells as well as on skin cells. Another aspect of different effects is also structure of cell where, in case of fat cells – adipocytes, a considerable part of intracellular space is filled with fat liquid, which has a different specific heat capacity than cytoplasm of other cells.

From the point of view of cell metabolism, the effect of heat energy leads to a change of pH in intracellular space. For metabolism to function right, pH of intracellular space plays one of the key roles, as many chemical reactions (enabled by enzymes) work optimally in certain physiological pH. When pH is changed, chemical reactions can be disturbed or stopped entirely. This can damage cell metabolism seriously and it also can endanger cell's survival.

Another factor is easier activation of lysosomal enzymes, which, when activated too soon or at a wrong place, can lead to a damage or a death of cells.

## Hypothermia

Cell metabolism is, among other factors, based on chemical reactions. Every chemical reaction works optimally at its optimal temperature. The change of temperature may lead to a change of reactivity of reactants, which leads to a change of the reaction or to its end. As human organism and its cells are adjusted to a stable temperature of human body, some of the steps of metabolism depend also on enzymes, which are influenced by the right temperature, as well.

The changes in cells and in structure of molecules result also from their exposure to very low temperatures. When taking into account cryolipolysis, the important change in structure of lipids starts in 10°C, when so called crystalization of lipids in lipid fluids of adipocytes begins.

In cellular space, lipids are stored in droplets, which contain triacylglycerols (fat acids tied to glycerol). When structure of lipids and metabolic processes are changed at the same time, cell can be irreparably damaged, which demonstrates itself after some time as apoptosis. Apoptosed cells are consequently removed from the body by its immune system.

### **Apoptosis**

Apoptosis is a specific cell process of so called controlled cell suicide. For a human body, it has a irreplaceable value. All in all, there are two ways of cell destruction. The first of them is necrosis – the process in which cells that cannot or do not manage to go through apoptosis are damaged irreparably. In course of necrosis, there arises an edema – swelling of cell. Its surface membrane can not endure the swelling of the cell and it bursts. With a disturbance of unity of cell, all cell parts are released into surrounding space. Enzymes used in a cell to protect it from bacterias are also released into surrounding space, and therefore, if not controlled, they can attack other cells and the necrosis can spread.

The second process is apoptosis. In its course, based on certain reasons (aging, redundancy, damage) the process of cell destruction begins. The cell gradually condensates its content and its nucleus. The parts of cytoplasm are gradually condensed and clustered, so that they became a small bags, which can be got rid of by immune system. The enzymes dangerous for the surrounding cells remain separated from extracellular space, the surrounding cells are not harmed and the cells that underwent apoptosis is removed by immune's system process called fagocytosis.

### **Fagocytosis**

Fagocytosis is a process during which specific immune system cells, a part of white blood cells absorbs and subsequently removes the remnants of apoptosed cells. From the range of white blood cells, mainly macrofaphages from myeloid group of leucocytes are adjusted to this function. They actively migrate to the parts of tissues where cells undergo apoptosis, they absorb the remnants of cells, neutralize harmful enzymes and through lymphatic vessels and blood circulation, they remove the remnants from the body.

### **Heat-Shock**

Every organism and its cells have their own mechanisms to cope with overcoming of thermal minimum or maximum. For example, heat-shock protein is one of these mechanisms and moreover, it has a protective function from abrupt changes of temperature. However, protective mechanisms have their limits too, and after exceeding those limits, there comes a damage of cells. The abrupt change of temperature leads to changes in metabolism from the point of view of the new temperature. Yet, it can also damage some of metabolism processes, as they are not able to adapt to the abrupt change. Therefore, it is assumable that the cycle of cryolipolysis combined with short – time heating of tissues would be more harmful to adipocytes (that, moreover, do not have as good thermoregulatory vessel protection as surrounding tissues) than only long-time cooling to the temperature of cryolipolysis.

### **Combined working** – Method of Thermocryolipide

It is assumable that the effect of hypothermy and hyperthermy is possible to use to achieve faster and less invasive functioning of these methods. Proposed programme works with different modalities of effect these methods have on adipocytes and surrounding tissues.



First, the effect of hyperthermy is used. It speeds up cell metabolism. There is also a possibility of change of speed and effectiveness of metabolic chemical reactions and, subsequently, it may lead to production of metabolites that, in case of accumulation or not being disposed of, may damage cells (e.g. reactive oxygen forms). Thanks to characteristic structure of cell content in fat cells that have high fat accumulation and thanks to their specific blood supply (and, therefore, different thermoregulation), when exposed to hyperthermia, fat cells are more exposed to its negative effects than surrounding tissues. Because of this, it is expectable that the effect on adipocytes is different than effect on muscles and skin.

In subsequent modality, hyperthermy is switched off and cooling of cells is activated. Fat cells are exposed to effective temperature of 4°C. At this temperature, morphology of lipid molecules is changing and they can subsequently damage cells, so that they themselves undergo the process of apoptosis and their remnants are disposed of by immune system in the process of phagocytosis. It is assumable that when the metabolism of cells is negatively influenced in cooling from the temperature of 36, 6°C, the effect is more intensive when the temperature changes from 39, 5°C to 4°C. When new modality begins, the hyperthermy starts again and it influences cell metabolism and metabolic products negatively.

**Fat cells are more sensitive to changes of temperature than other tissues in human body. This is the reason why minimal temperature of 0-4°C reached during the method of Thermocryolipide is sufficient enough. Moreover, the use of these temperatures guarantees that the surrounding tissues are protected from the process of cooling and, therefore, they are not harmed.**

By now, this is the most efficient painless lipolysis supported by clinical studies.

Clinical studies have shown that the process of controlled death of fat cells is gradual and safe. The levels of cholesterol and triglycerids are not increased during the procedure. After a single application,

fat cells decrease by 25 – 30% in each tested case. The effect is clearly visible after a month or two and, the most importantly, it lasts.

The outcomes of Thermocryolipide method are comparable to normal liposuction.

### **Options of Cryo JETT Use**

Cryoelectrophoresis and Thermocryolipide can be used as an alternative to some invasive methods such as mesotherapy, liposuction and microdermabrasion.

#### **The most common use of Cryo JETT:**

- non-injection mesotherapy
- body and face lifting
- reduction of fat layer
- figure modelation
- after-laser treatment ( Fraxel, MTS, IPL)
- toning and improvement of skin texture
- skin treatment with vitamine C
- sculp treatment



#### **Use of Cryo JETT in Thermocryolipide:**

The functionality of this unique device is based on the starting of the natural process of natural death of fat cells by working of highly precise technology, wich targetedly freezes fat cells through skin without damaging surrounding tissues.

The device can effectively target for example fat pads on abdomen and hips and it is an efficient alternative to surgical operation.



First results are visible after 2-4 months after the procedure. Gradual decrease of fat cells may last for next 6 months.

After the first procedure, the amount of subcutaneous fat decreases by 22% and then the effect increases during a few months.

**Before**



**After one month**



**How the Cryo JETT procedure works:**

- First, a thin layer of Cryo\*E Action gel is applied on the treated area
- Then, the gel is fixed by Cryo\* E Action Concentrate
- After 30 seconds, a mask is created
- Pads with wet electrodes are attached

In a few first minutes client feels intensive cold which disappears quickly.

Taking into consideration the non-invasiveness of the operation, there are no restriction after the treatment. The client can therefore engage in his usual activities immediately.



**Advantages of Cryo JETT:**

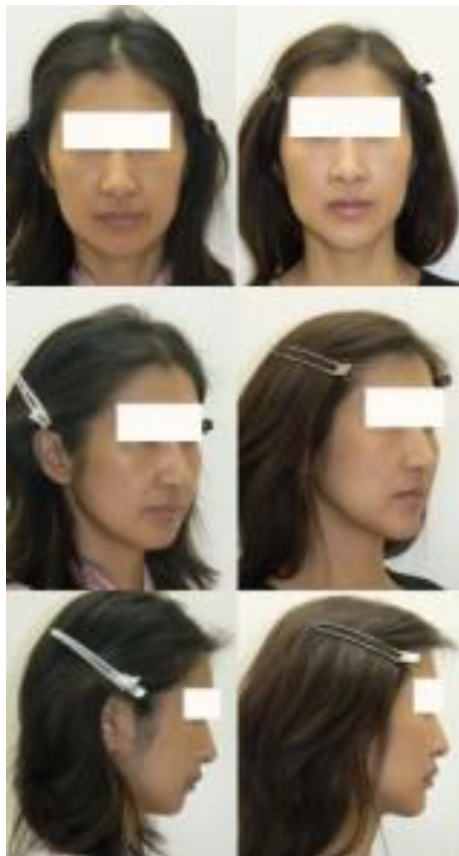
- non-surgical treatment
- painless
- does not damage skin integrity (no hematomas or swellings)
- no need for convalescence
- clients can get back to their usual professional and social life immediately after the treatment
- the procedure does not require any restrictions in diet, exercise or taking pills
- the procedure itself is tolerated very well by patients. It takes 60 minutes, depending on the range of treatment. During the treatment, clients usually read, telephone, work on their laptops or relax.





### Use of Cryo-JETT for cryo-electrophoresis:

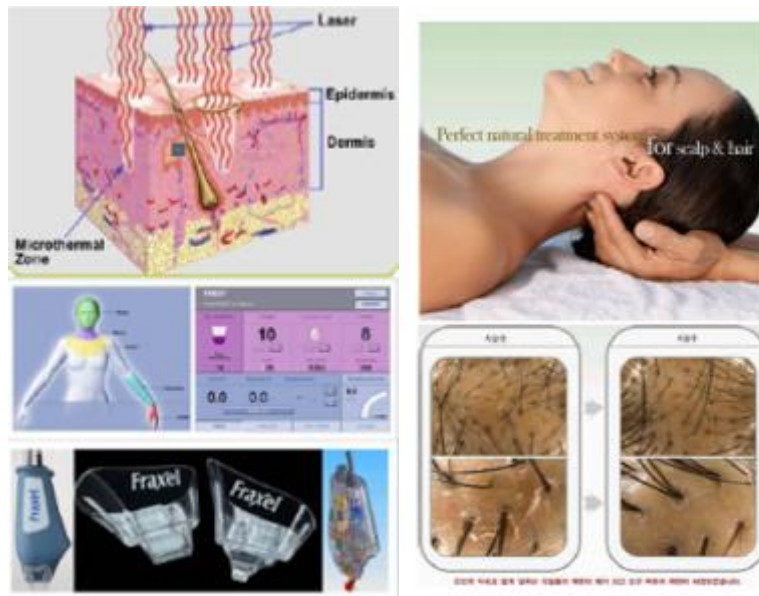
Cryoelectrophoresis is a non-invasive method. Active ingredients are transmitted to skin by pulsating current. Thanks to this method, 80-90% of active ingredients is transmitted to inner layers of skin.



### Advantages of cryo-electrophoresis with Cryo JETT:

- During the skin treatment the temperature is between  $-10^{\circ}\text{C}$  and  $0^{\circ}\text{C}$ , there is no feeling of warm or heat during the treatment
- It transfers 80-90% of active ingredients into inner layers of skin, which is more than 200-300% than usual treatment.
- Thanks to cooling of skin, there is a vasoconstriction, which means that active ingredients are not transported to blood circulation and therefore, the treatment is extremely targeted and efficient.

- The effect of oscillatory current in combination with cryogenic technology increases the permeability of skin and therefore it supports transmission of active ingredients into inner layers of skin
- Activation of connective tissues results into toning of skin and removal of toxins
- The treatment is very suitable for patients after plastic surgeries
- Removal of problems after fraction laser treatment (pain, dry skin, burning)
- Treatment after IPL (relaxation, regeneration, hydration, removal of pain)
- Treatment after Mesoroller therapy
- Enables treatment of both body and face
- Alopecia treatment



### Use of Cryo-JETT for cryo-electrophoresis

The head of Cryo JETT that stimulates skin uses the combination of oscillatory current and cryogenic technology. Being exposed to cold, skin increases its permeability and, therefore, the transmission of active ingredients into inner layers of skin is supported. The active ingredients can be transmitted up to 5 cm under the skin surface. The treatment is painless and very pleasing for customers. It takes 15-30 minutes, depending on size of treated area.

Moreover, it activates connective tissues and subsequent toning of skin and removal of toxins



### **Contraindications**

- pregnancy and breast-feeding
- epilepsy
- cancer
- heart and kidney disease
- diabetes
- infectious diseases
- pacemaker
- atopic eczema
- problems with body temperature regulation