

LIPOCELL

NATURAL ADIPOSE TISS'YOU

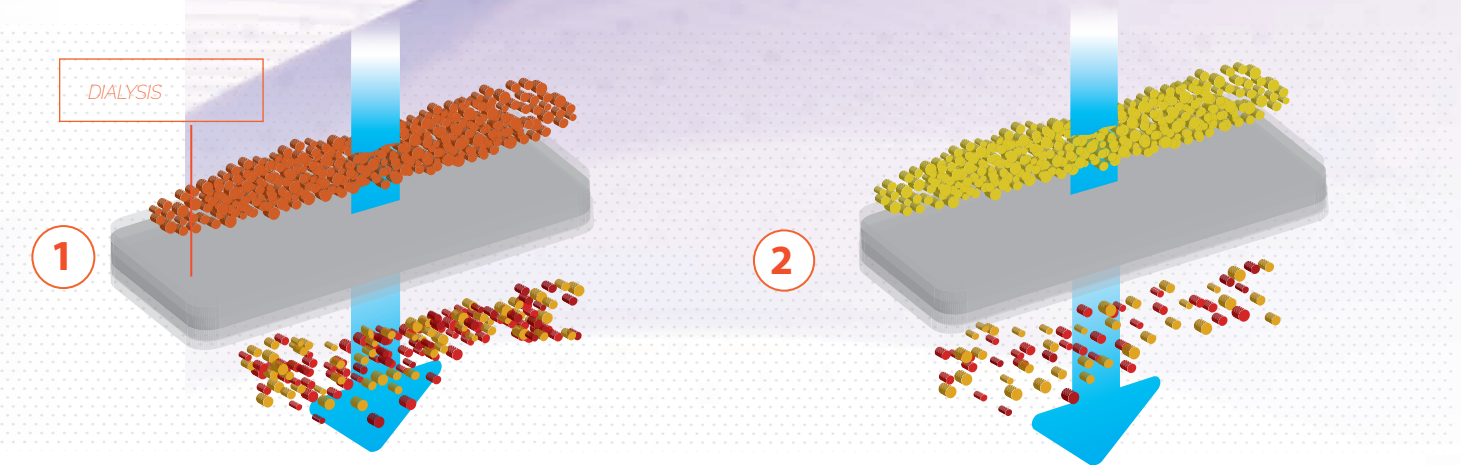
Adipose tissue was first used during the First World War to promote the healing of soldiers' wounds. After a century, researchers have discovered that fat is one of the richest adult tissues in mesenchymal stem cells frequency.

These cells can differentiate into specialized cells, but more importantly they can respond to local stimuli coming from a degenerated tissue and release molecules, such as growth factors and anti-inflammatory cytokines to promote healing.

LIPOCELL is a technology able to enhance the biological properties of adipose tissue.

TECHNOLOGY

LIPOCELL is equipped with a semipermeable membrane that separates adipose tissue from waste elements with the help of a continuous irrigation. The dialysis of the tissue minimizes the stress and trauma to cell and extracellular matrix architecture, removing the blood and oil residues which are pro-inflammatory. The final product is a purified adipose tissue reduced into clusters.



CHARACTERISTICS



MINIMAL MECHANICAL STRESS

to maintain the biochemical properties of cells and the integrity of extracellular matrix



TOTAL PURIFICATION

from blood and oil residues that can possibly lead to inflammation



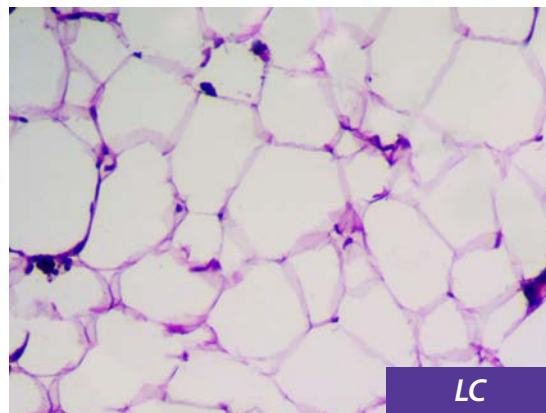
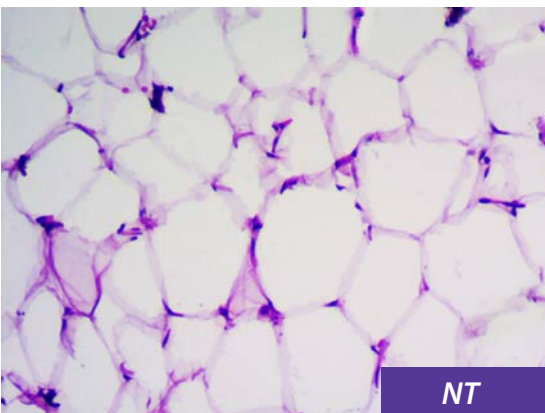
MINIMAL MANIPULATION

of the tissue granted by a "point-of-care" technology that performs intraoperatively

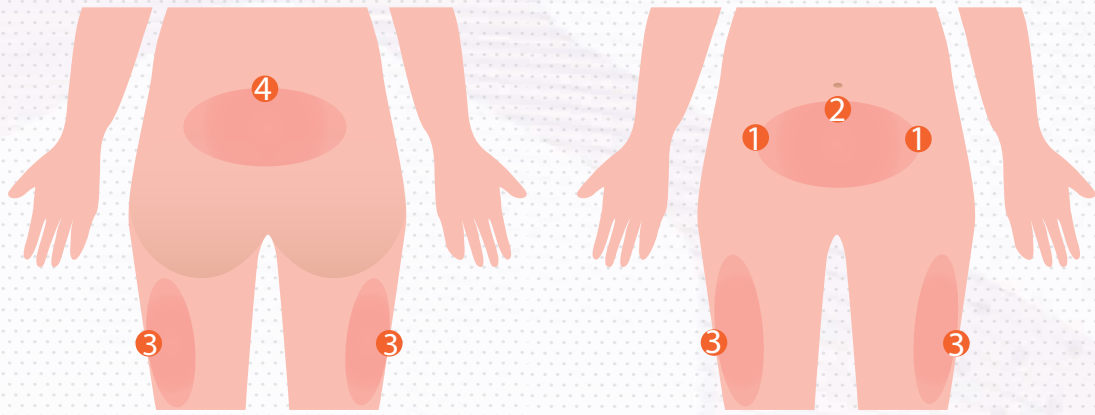


CLOSED-LOOP CIRCUIT

and a procedure completely performed in the sterile field



Adipose tissue histology before (NT) and after Lipocell treatment (LC). The hematoxylin eosin staining shows the maintenance of tissue architecture integrity.



A SMALL LIPOSUCTION...

Adipose tissue can be harvested with a small liposuction from subcutaneous fat. In most of the regenerative medicine procedures the necessary final volume of Lipocell needed varies from 6 to 12 ml, which can be obtained from 60 to 90 ml of lipoaspirate (variability depends on patient characteristics and harvest technique).

The technique can be executed in local anesthesia thanks to the infiltration of Klein solution, however a mild sedation is recommended. The preferable harvesting area is the abdominal subcutaneous fat.

Patient needs to be in supine position and a symmetric double access is possible between iliac and lumbar abdominal area **(1)**; alternatively the access can be positioned in the periumbilical area **(2)**. Depending on patients' characteristics, it is possible to choose alternative harvesting areas such as trochanteric fat that must be executed bilaterally **(3)** or lumbar fat **(4)**.

It is recommended the presence of a plastic surgeon on very thin or sporty people or in the presence of scars and previous abdominal surgeries.

INFILTRATION

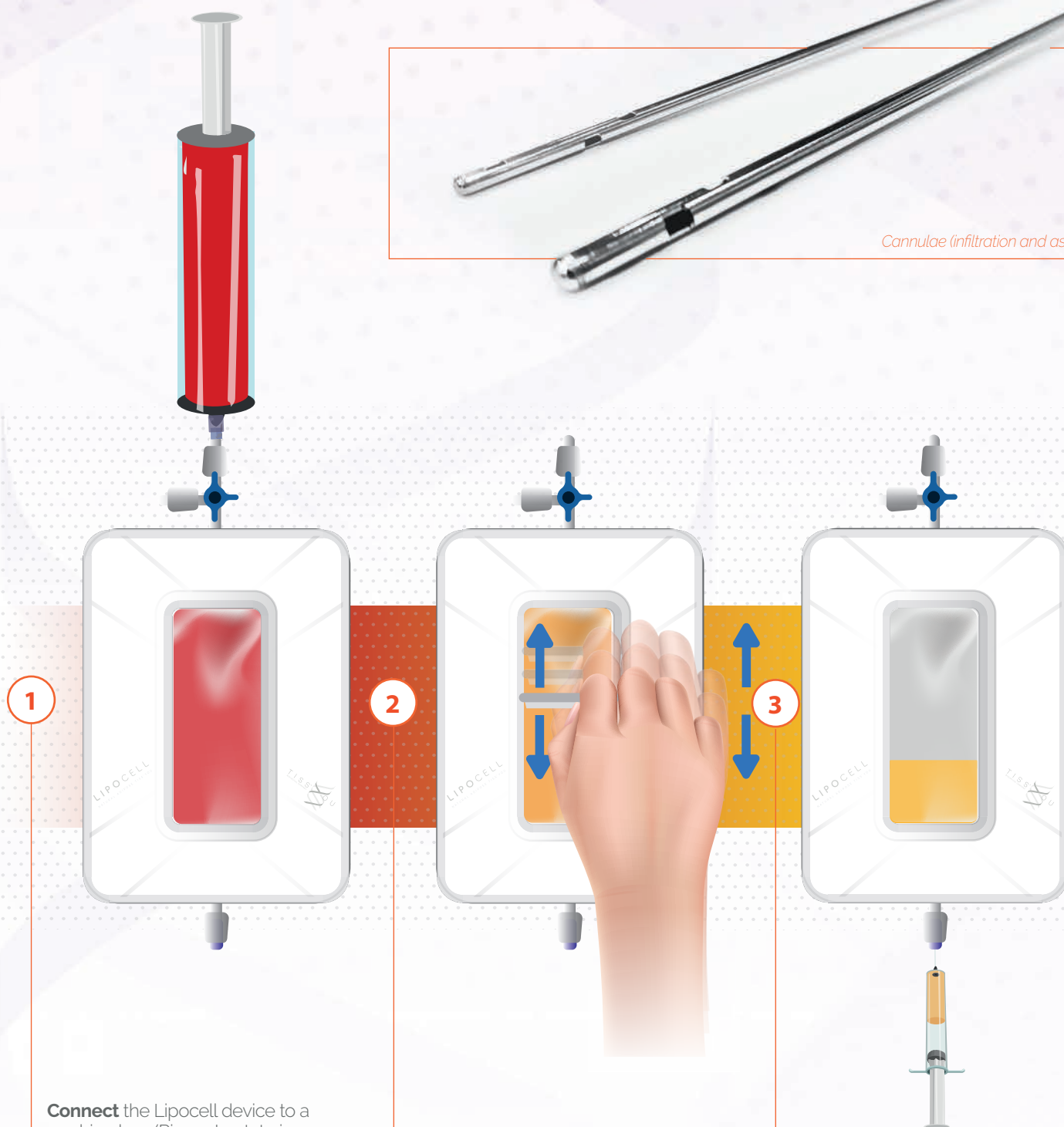
KLEIN SOLUTION
 250 ml saline
 20 ml Lidocaine 2%
 0,5 ml Epinephrine 1mg/ml
**values are just indicative and may vary*

The infiltration aims to prepare for the adipose tissue liposuction. Epinephrine can limit the bleeding during the liposuction thanks to its vasoconstrictory effect, while lidocaine has an aesthetic effect. The saline, while promoting more vasoconstriction through pressure increase, creates a tumescent area that help the liposuction with the provided aspirating cannulae.

After performing an incision in the illustrated spots, use the infiltration cannula (16G) connected to 50 ml syringes pre-filled with Klein solution. It is very important to perform the infiltration during retrograde movements of the cannula homogeneously. Avoid transverse movements with the cannulas. After the infiltration of 150-200 ml of Klein solution, wait 10 minutes. It is possible to perform a digital manipulation of the abdomen to help the distribution of the Klein solution in the subcutaneous layers.

ASPIRATION

After 10 minutes, it is possible to connect the aspirating cannula (13G) to the self-blocking syringe. The block system, that must be operated while the cannula is inside the subcutaneous adipose panniculus, creates negative pressure inside the syringe. Moving the syring back and forth allows the harvesting of the lipoaspirate from the previously infiltrated areas. Avoid transverse movements with the cannulas. Once the needed lipoaspirate is obtained, proceed to the medication. After the operation use compressive dressing to limit the occurrence of hematomas and bruises. The use of an elastic belly for a week will help for this purpose.



Connect the Lipocell device to a washing bag (Ringer Lactate is recommended) with a minimum volume of 500 mL hanging from a stand.
Insert the obtained lipoaspirate through the "IN" luer-lock connection.

Open the irrigation and **facilitate** the washing of the tissue with the brush provided within the kit operating gentle movements. Keep on until the tissue becomes yellow and the outflow irrigation is almost transparent.

Close the irrigation and **remove** the excess of washing liquid with the help of the brush.
Connect a 10 ml syringe to the "OUT" luer-lock connection and **collect** the final product ready-to-use.

It is recommended not to manipulate further the tissue and to use it accordingly to therapeutic needs. If the final product is very dense, transfer it into the 2,5 ml syringes provided within the kit or smaller luer-lock syringes, in order to facilitate the injection. It is possible to use the needle provided within the kit, or any other needle with a recommended diameter of 18G.



LIPOCELL device



LIPOCELL



ORTHOPAEDICS



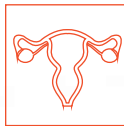
SPINE



WOUND HEALING



COLONPROCTOLOGY



GINECOLOGY



PLASTIC AND RECONSTRUCTIVE SURGERY



PAIN MANAGEMNT

ADVANTAGES

HIGH REGENERATIVE POTENTIAL

The atraumatic processing of the tissue limits the cell stress, thus not impairing their trofic and anti-inflammatory activity.

An undisrupted extracellular matrix is able to act as a natural scaffold for cells by improving their vitality and contributing to tissue regeneration

The removal of blood and oil from adipose tissue limits the stress and inflammation of the tissue hosting the graft

A SIMPLE, EFFECTIVE, AND SAFE PROCEDURE

The system is a closed-loop circuit and the procedure is completely performed in the sterile field, minimizing the risk of contaminations

The device fulfills the requirements of cell and tissue minimal manipulation

The procedure is simple, fast, and reproducible - being versatile in different therapeutic fields

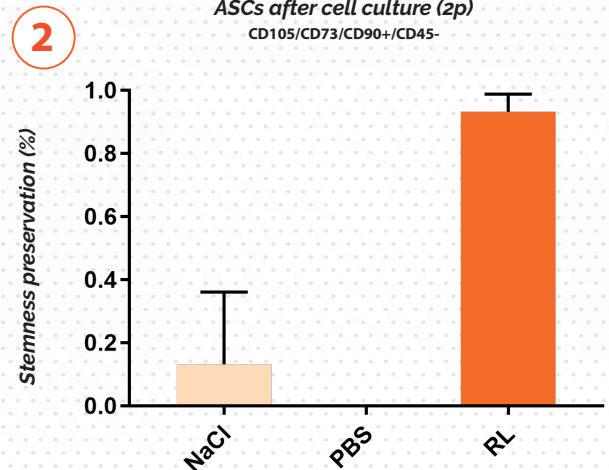
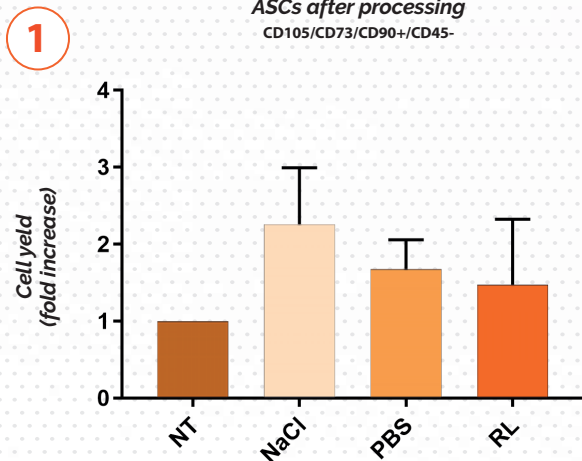
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BOOST

Lipocell processing combined with Ringer Lactate washing completely preserves the stemness potential of adipose tissue's mesenchymal cells.

ASCs were isolated and counted immediately after Lipocell processing (1) or after cell culture (2 passages) (2). Data show fold increase of cell yield (1) and stemness preservation percentage (2) over control (untreated lipoaspirate).



NT = untreated lipoaspirate ; NaCl = saline washing ; PBS = PBS washing ; RL = Ringer Lactate washing.

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Bibliography

