BIOSCIENCE INSTITUTE

STEM CELLS - EXOSOMES

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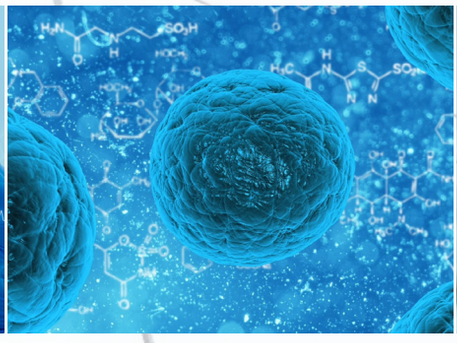

BIOSCIENCE INSTITUTE

Since 2007, Bioscience Institute has established itself as an international leader in cellular and molecular biology services, operating state-of-the-art sequencing platforms and GMP cell factories in Italy and the UAE.

As a spin-off from the University of Rome, the Bioscience Institute specializes in mesenchymal stem cell and exosome culture services for advanced personalized therapies that are critical for addressing degenerative processes caused by aging or pathological conditions. The procedures for extraction, expansion, and banking of stem cells and exosomes are performed in laboratories based in Dubai and Italy. The services of the Bioscience Institute are unique as they offer the most advanced stem cell and exosome therapies for any age-related defects.

Their facilities meet stringent international quality standards, ensuring that all biological samples and treatments adhere to the highest levels of safety and efficacy. The institute has developed revolutionary protocols for sequencing circulating DNA, designed to identify the drivers of aging and associated diseases. This breakthrough enables precision preventive medicine tailored to individual needs.

Their proprietary technology can detect minute genetic variations that contribute to cellular senescence and tissue degradation, allowing for early intervention before clinical symptoms manifest. The combination of two areas of expertise, stem cells and cfDNA sequencing, has positioned the Bioscience Institute as the leading company in the field of longevity.

STROMAL VASCULAR FRACTION (SVF) VS. MESENCHYMAL STEM CELLS (MSC)

FEATURES	SVF	MSC
STANDARDIZATION OF PRODUCT AND THERAPY	NO Composition varies based on the collection site, the patient's biological age, the digestion technique used, and several other factors.	YES A pharma-grade product derived from a cell isolation and culture process, subject to strict quality control procedures
CELLULAR HOMOGENEITY	NO Heterogeneous cell population	YES Isolated and phenotyped cells
CONCENTRATION OF MSC	Between 0,001% and 0,01% of the total cells within	100%
QUANTITY OF MSC PER 10ML FAT*	Around 9.000	> 100.000.000 after expansion
QUANTITY OF MICROPHAGES PER 10ML FAT**	>400.000	0 Eliminated through isolation of MSCs
SIDE EFFECTS	YES often unpredictable, usually mediated by inflammatory processes caused by the macrophage population or potential bacterial contamination	NO
DOSAGE	SINGLE DOSAGE not tailored to treatment	VARIOUS DOSAGES AVAILABLE 10-200 millions of MSC (based on indications)
SAFETY	The production process is not monitorable and not subject to quality and biological safety controls	Pharma-grade production process, subjected to quality controls that ensure product sterility and biological safety
N° OF TREATMENTS POSSIBLE FROM 1 FAT COLLECTION	1	≥10
PHENOTYPING	NO	YES
CELLULAR COMPOSITION	Pericytes, Macrophages, Endothelial Cells, Mesenchymal Stem Cells, Adipocytes, Lymphocytes, Fibroblasts	Mesenchymal Stem Cells
QUALITY CONTROL	NONE	Endotoxins, Mycoplasma, Anaerobic/Aerobic Bacteria, Viruses, Phenotype
PRODUCTION TIME	1 HOUR	2-4 WEEKS
FDA APPROVAL	NO	YES (Ryoncil 18-12-2024)
EMA APPROVAL	NO	YES (Alofisel, Spherox, Ryoncil)
USAGE	Strictly Autologous, Homologous, and Localized	Autologous and Allogenic Localized and Systemic

EXPANDED MESENCHYMAL STEM CELLS

IV Therapy Body Aging	LIFESKILL
Anti-Aging Skin Care	LIPOSKILL
Hair Loss	HAIRSKILL
Body Shaping	LIPOSKILL PLUS
Cartilage and Bone Degeneration	ORTHOSKILL
Female Rejuvenation	GYNSKILL
Premature Ovarian Failure	OVOSKILL
Erectile Dysfunction	ANDROSKILL

LIFESKILL

Treatments with expanded mesenchymal stem cells (MSCs) slow down the aging process and prevent age-related diseases through various biological and molecular mechanisms, such as:

- Reducing systemic inflammation, a key contributor to the pathogenesis of many chronic age-related diseases (such as arthritis, cardiovascular disease, and diabetes).
- Repairing and regenerating damaged tissues, particularly tissues with a limited natural ability to regenerate.
- Modulating immune responses, improving T-cell function and reducing the frequency of autoimmune reactions or chronic inflammatory conditions.
- Reducing cellular senescence and helping maintain tissue integrity and functionality.
- Exerting protective effects against oxidative stress by secreting antioxidant molecules or activating antioxidant pathways in host cells.
- Promoting the formation of new blood vessels to improve tissue perfusion and contribute to the function and regeneration of tissues.

MODE OF ACTION OF MSC

Tissue Regeneration

Have the ability to differentiate into various tissue cell types, contributing to the renewal and repair of damaged or degraded tissues.

Secretion of Tropic Factors

Secrete a wide range of growth factors and other bioactive molecules that stimulate local cellular regeneration and angiogenesis (the formation of new blood vessels).

Immunomodulatory Effects

Possess significant immunomodulatory properties, modulating immune responses and reducing chronic inflammation, which is often associated with aging and related diseases.

Prevention of Fibrosis

Inhibit fibrosis and help maintain tissue functionality, preventing common issues in aging such as joint stiffness and reduced lung or kidney function.

Support for the Cellular Microenvironment

Enhance the overall cellular environment, supporting the survival and functionality of native cells.

RESULTS

Improved Physical Performance and Vitality – Enhances overall physical performance and energy levels.

Neuroprotective Effects – Improves cognitive function and mental clarity.

Tissue Repair and Regeneration – Promotes the healing and regeneration of damaged tissues.

Reduction of Age-Related Decline – Helps reduce the visible signs of aging and supports overall health.

Immune System Support – Boosts protection against and diseases through immunomodulatory properties.

Cardiorespiratory System – Enhances lung and heart function, increasing endurance and recovery capacity.

Musculoskeletal System – Reduces recovery time and enhances performance, promoting stronger muscles.

Circulatory System – Improves blood vessel elasticity and peripheral circulation.

LIPOSKILL

The use of expanded mesenchymal stem cells from adipose tissue marks a major breakthrough in aesthetic and reconstructive treatments. This innovative therapy provides a safe and highly effective approach to reducing visible signs of aging while also unlocking new potential for addressing complex skin conditions such as scars and keloids.

INDICATIONS

SKIN AGING
When injected into the superficial dermis, it improves skin elasticity and texture, visibly reducing fine lines.

WRINKLES
When combined with an adipose tissue scaffold, it restores volume and structure to the dermis, effectively addressing both expression lines and sagging wrinkles.

SCARS
The regenerative power of MSCs helps repair tissue by reducing fibrosis and inflammation.

KELOIDS
Modulates the inflammatory response through its immunomodulatory, antifibrotic, and anti-inflammatory properties, helping to minimize the formation of hypertrophic scars.

MODE OF ACTION

- **Differentiation** - Mesenchymal Stem Cells differentiate into fibroblasts and keratinocytes, boosting collagen and elastin production.
- **Secretion of Growth Factors** - Mesenchymal Stem Cells release growth factors that stimulate skin cell proliferation and the formation of new connective tissue.
- **Modulation of the Immune Response** - They have immunomodulatory properties that help reduce chronic inflammation, often linked to skin aging and scar formation.
- **Stimulation of Neoangiogenesis** - The formation of new blood vessels, essential for supplying nutrients to the tissue, further improves the appearance and health of the skin.

FILLERS WITH STEM CELLS

Stem cell-based filler with an autologous fat scaffold

Tissue Regeneration - Unlike hyaluronic acid, which only provides temporary filling effects, mesenchymal stem cells have the ability to regenerate tissue, improving skin quality.

Long-lasting Results - Gradual and lasting improvements reduce the need for frequent treatments.

Safety and Tolerability - Stem cells and autologous fat eliminate the risk of allergic reactions or rejection.

Treatment Personalization - The treatment provides a long-lasting, volumizing, and contouring effect that looks completely natural, perfectly harmonizing with the surrounding body areas.

Natural Results - Beneficial effects on overall skin health, improving hydration, texture, and tone.

HAIRSKILL

HAIRSKILL offers an approach focused on regeneration rather than simply slowing down hair loss. Mesenchymal Stem Cells treatment is designed not only to restore lost hair but also significantly improves the quality and health of the scalp and hair.

INDICATIONS

HAIRSKILL is specifically designed for individuals struggling with androgenetic alopecia, alopecia areata, or hair thinning, as well as those who have not achieved satisfactory results with conventional treatments. Offering a personalized, minimally invasive solution, it is an effective option for both men and women seeking natural hair restoration.

MODE OF ACTION

HAIRSKILL works through the following mechanisms:

- Stimulates inactive or “dormant” hair follicles to enter the active growth phase.
- Produces signaling molecules that interact with nearby cells, promoting their proliferation and supporting hair growth.
- Differentiates into the specialized cells needed for hair growth and the formation of new hair follicles.
- Releases specific growth factors and cytokines that stimulate hair growth and help extend the anagen phase, increasing hair density and improving the overall health of the scalp.
- Has immunomodulatory effects, particularly beneficial in treating conditions like alopecia areata, where inflammation plays a key role.
- Promotes neoangiogenesis, ensuring a better supply of nutrients and oxygen to hair follicles, which is essential for their recovery and maintenance.

WHAT TO EXPECT

Reduction in Hair Loss

Stabilizes the hair growth cycle, resulting in a reduction in shedding.

Hair Regeneration

Promotes hair regeneration in areas where follicles are not completely atrophied or are merely dormant.

Enhanced Scalp Health

Reduces inflammation, improves hydration, and optimizes nutrient delivery to the scalp.

Long-lasting Results

Visible improvements appear within a few weeks which continue progressively for up to a year or more after the treatment.

Improvement in Hair Density and Thickness

Increases density by reactivating dormant hair follicles and enhancing the health of existing follicles.

LIPOSKILL PLUS

Today, it is possible to use stem cells for natural body contouring treatments, eliminating the need for artificial implants. Many patients prefer to use their own adipose tissue and stem cells rather than resorting to prosthetics.

LIPOSKILL PLUS (for enhancing the **FACE, BREASTS, BUTTOCKS,** and **PENIS**), which combines stem cells with autologous fat, offers a natural alternative to more common methods.
The procedure involves isolating and expanding stem cells obtained through a micro-liposuction, then mixing them with a subsequent fat harvest intended for volume enhancement.

MODE OF ACTION

Cell Survival

The main limitation of lipofilling is that most of the initial volume (84%) is lost quickly, negating the expected results and causing dissatisfaction. Adding stem cells to the implanted fat improves the survival rate of adipocytes by 90%, ensuring the lasting retention of the achieved volume.

Volume Maintenance

Stem cells enhance the longevity of fat cells, making the volume of the treated area (face, breasts, buttocks, penis) permanent.

Natural Appearance

The procedure, based on the use of your own adipose tissue and stem cells, gives the volume and contouring results a completely natural look.

Tissue Regeneration

Stem cells differentiate into various cell types, promoting tissue regeneration, neoangiogenesis, and the integration of new fat cells with the existing tissue.

RESULTS

The softness and contouring of the treated area with LIPOSKILL PLUS result in a more aesthetically pleasing and natural appearance compared to what can be achieved with artificial implants. By utilizing your own adipose tissue enriched with autologous stem cells, this procedure ensures seamless integration with the breast tissue for superior, long-lasting results.

- Double Benefit: LIPOSKILL PLUS requires liposuction from areas such as the abdomen, buttocks, and thighs, allowing for simultaneous body reshaping.
- Additional treatments can be performed to further increase the achieved volume.
- All types of diagnostic exams (e.g., mammograms) can be carried out without any limitations.

ORTHOSKILL

INDICATIONS

Mesenchymal Stem Cells treatments are particularly effective for patients with osteoarthritis, osteoporosis, traumatic cartilage injuries, and other degenerative joint conditions where the degeneration of connective tissue is a key factor.

MODE OF ACTION

Tissue Regeneration

MSCs have the ability to differentiate into various cell types, including chondrocytes and osteoblasts, which are essential for regenerating cartilage and bone tissue. By infiltrating MSCs into the affected areas, tissue regeneration is promoted**.**

Inflammation Modulation

MSCs have a powerful immunomodulatory effect that reduces pain and inflammation within the joint, providing symptomatic relief and improving mobility.

Secretion of Trophic Factors

MSCs promote healing and tissue regeneration through the secretion of growth factors and cytokines that stimulate the repair and regeneration of surrounding tissues.

Prevention of Further Degeneration

MSCs slow down or sometimes prevent the progression of degenerative diseases through their ability to remodel and strengthen connective tissue.

Exosomes therapy for orthopedic treatments promote tissue repair and regeneration in:

- Osteoarthritis
- cartilage degeneration
- conditions associated with inflammation and tissue damage
- tendon or ligament injuries
- tendonitis, tendinopathy
- bone fractures or non-unions
- avascular necrosis
- cartilage injuries

MSC vs. **SVF** and **HYALURONIC ACID**

Regenerative Potential – Expanded MSCs have a greater ability to regenerate cartilage tissue compared to SVF (which has a low and unquantifiable cell dosage) and hyaluronic acid. This is due to their ability to differentiate into chondrocytes, which can repair and renew damaged cartilage tissue.

Long-term Effects – While hyaluronic acid provides temporary (and progressively diminishing) relief by improving joint lubrication, MSCs offer long-term benefits by altering the course of the disease through their regenerative action.

Reduction of Inflammation – MSCs have immunomodulatory properties that help reduce inflammation in the joint, a significant advantage over SVF and hyaluronic acid, which do not have direct effects on inflammation.

Lower Treatment Frequency – Due to their ability to induce more lasting and significant changes, expanded MSC injections do not require the frequent repetition that hyaluronic acid and SVF treatments often need to maintain their benefits.

Safety and Tolerability – Since they are cultured and tested under controlled conditions, expanded MSCs offer a superior safety profile, with a lower risk of adverse reactions compared to treatments using heterogeneous and uncontrolled components like SVF.

VAGINAL REJUVENATION

GYNSKILL

This therapy offers a non-surgical approach to treat various symptoms related to vaginal aging, such as dryness, laxity, and discomfort, which can significantly impact quality of life.

INDICATIONS

The treatment with Mesenchymal Stem Cells is particularly suitable for women experiencing functional and structural vaginal changes due to menopause, childbirth, or aging.

The indications include:

- Vaginal atrophy
- Vaginal laxity
- Sexual dysfunctions such as reduced sensitivity
- Mild stress urinary incontinence

MODE OF ACTION

Tissue Regeneration

MSCs have the ability to differentiate into various types of connective tissue cells, aiding in the regeneration of damaged or degraded vaginal tissue.

Improvement in Elasticity and Tone

Stem cells stimulate the production of collagen and elastin, thereby improving the elasticity and tone of the vaginal walls.

Secretion of Trophic Factors

MSCs secrete growth factors that promote healing and cellular renewal, enhancing vascularization and the natural hydration of vaginal tissue.

Anti-inflammatory Effect

The immunomodulatory properties of MSCs reduce chronic inflammation, often associated with post-menopausal vaginal atrophy.

PRIMARY OVARIAN INSUFFICIENCY

OVOSKILL

This treatment is recommended for women diagnosed with early menopause who wish to alleviate associated symptoms, such as irregular periods, hot flashes, and reduced fertility. It is particularly relevant for patients seeking alternatives to traditional hormone replacement therapies.

MODE OF ACTION

- **Ovarian Regeneration –** MSCs are known for their ability to differentiate into various cell types and their potential to repair damaged tissues. When injected directly into the ovaries, these cells can help regenerate functional ovarian tissue.
- **Improvement in Ovarian Function –** Stem cells enhance ovarian function by secreting trophic factors and cytokines that stimulate the resumption of follicular activity and estrogen production.
- **Modulation of the Ovarian Microenvironment –** MSCs can modulate the cellular environment, reducing inflammation and improving local conditions for the recovery of ovarian function.
- **Systemic Effects –** In addition to local effects, the treatment can provide systemic benefits, improving general menopausal symptoms by enhancing the hormonal profile.

ANDROSKILL

Erectile dysfunction (ED) is a common condition that affects the lives of millions of men and their partners. Mesenchymal stem cell therapies can address both the symptoms and underlying causes of ED by promoting tissue regeneration and improving blood circulation.

ANDROSKILL uses MSCs to promote the regeneration of blood vessels and erectile tissue in the penis, with the following goals:

- Improve Blood Circulation: MSCs repair and create new blood vessels, thus enhancing blood flow.
- Regenerate Damaged Tissue: By stimulating the growth of new tissue, MSCs restore erectile function.
- Reduce Inflammation: The anti-inflammatory properties of MSCs help reduce chronic inflammation that impairs erectile function.
- Restore Normal Smooth Muscle Function: MSCs restore normal smooth muscle function in the corpus cavernosum for penile erection.
- Neuroprotective Effects: MSCs release neurotrophic factors that can protect and repair damaged nerve cells, as seen in ED caused by diabetes or surgical procedures.
- Stimulate Local Cells: **ANDROSKILL** secretes growth factors and other cytokines that stimulate the resident cells in the penis to enhance their reparative activities.

INDICATIONS

- Vasculogenic
- Nerve Damage
- Diabetes-Related Dysfunction
- Post-Prostatectomy Erectile Dysfunction
- Peyronie's Disease
- Aging-Related Factors

RESULTS

- Improved Blood Flow
- Nerve Regeneration
- Reduced Fibrosis
- Enhanced Tissue Health
- Increased Endothelial Function
- Long-term Effectiveness

Innovative and Non-Invasive – Unlike other treatments that may require surgery or continuous medication, Androskill is non-invasive and leverages the body's regenerative power.

Personalized – Each treatment is tailored to the individual needs of the patient, ensuring maximum therapeutic potential.

EXOSOMES SOURCED FROM LAB

Wrinkles - Scars - Keloids	EXOSKILL
Hair Loss	EXOHAIR
Orthopedic Treatement	EXOJOINT
Vaginal Rejuvenation	EXOGYN
Anti-Aging IV Therapy	EXOAGING

FRESH EXOSOMES DERIVED FROM MESENCHYMAL STEM CELLS

Exosomes are tiny extracellular vesicles released by stem cells that play a vital role in intercellular communication. They serve as key mediators in tissue regeneration by transporting growth factors, mRNA, microRNA, and proteins that regulate repair processes, cellular proliferation, and angiogenesis.

MODE OF ACTION

- Exosomes transport growth factors, cytokines, and other bioactive molecules that stimulate cell proliferation, migration, and differentiation, ultimately promoting tissue repair.
- They modulate inflammation and immune responses in diseases associated with aging.
- Exosomes reduce cellular senescence and its harmful effects on tissue function by regulating the expression of genes linked to senescence.
- They also promote blood vessel formation by stimulating the proliferation, migration, and formation of endothelial cells.

EXOSOMES FRESH VS. LYOPHILIZED

Fresh exosomes maintain a biochemical composition similar to that of the original cells from which they are derived, rich in proteins, lipids, RNA, and other functional biomolecules. They are not freeze-dried because the freeze-drying process, which involves dehydration through freezing followed by vacuum drying, alters and damages these delicate molecules.

During freeze-drying, the ice that forms disrupts the exosome membranes, reducing the effectiveness of the vesicles. Fresh exosomes better preserve their biological characteristics compared to freeze-dried ones, making them more effective in transmitting signals and functions from stem cells to target cells.

EXOSOMES STEM CELLS DERIVED VS. PLANT DERIVED

Exosomes retain the therapeutic properties of their original source; therefore, those derived from stem cells emulate the regenerative properties of the stem cells themselves, while those from plant sources reflect the properties of the plants. Exosomes derived from adipose tissue mesenchymal stem cells (MSCs) and those derived from plant sources present significant differences in terms of origin, composition, biogenesis, and potential applications:

Composition:

Exosomes from MSCs contain proteins, lipids, and nucleic acids (such as microRNA) specific to their mammalian origin, reflecting the characteristics of their source cells. Plant-derived exosomes also include proteins, lipids, and nucleic acids, but their composition is specific to their plant source.

Immunogenicity:

Exosomes from MSCs have low immunogenicity and can modulate immune responses in mammals, making them suitable for therapeutic applications in humans. In contrast, plant-derived exosomes, due to their non-mammalian origin, may exhibit immunogenicity that could limit their therapeutic potential.

EXOSKIN

When injected into the skin, exosomes exert a revitalizing effect, a thousand times greater than that of PRP. When combined with lipofilling, they are an excellent option for skin filler treatments.

- They stimulate the proliferation of fibroblasts and keratinocytes to improve the thickness, texture, and overall appearance of the skin.
- They promote the synthesis and production of collagen and elastin, enhancing elasticity and tone to reduce wrinkles and fine lines.

FOR PATIENTS LOOKING FOR:

- A more natural and biocompatible option compared to synthetic fillers and chemical biorevitalizers.
- Exosomes combined with lipofilling to achieve more natural and longer-lasting results than traditional fat-based fillers or hyaluronic acid.
- Skin rejuvenation and restoration of facial or hand volume.
- A lasting solution to treat irregularities or asymmetries.
- Improvement of skin texture

The therapeutic effects of MSC exosomes arise from their regenerative, anti-inflammatory, and angiogenic properties.

Cell proliferation and migration: MSC exosomes contain various growth factors, cytokines, and signaling molecules that stimulate the proliferation and migration of skin cells, such as fibroblasts and keratinocytes. This helps improve skin thickness, texture, and overall appearance.

Collagen synthesis: MSC exosomes promote collagen synthesis in fibroblasts by transferring bioactive molecules like transforming growth factor-beta (TGF-β) and connective tissue growth factor (CTGF). Increased collagen production can help improve skin elasticity, firmness, and texture, reducing the appearance of wrinkles and fine lines.

Extracellular matrix (ECM) remodeling: MSC exosomes regulate the synthesis and degradation of extracellular matrix proteins, such as collagen, elastin, and hyaluronic acid, which are essential for maintaining skin structure and hydration. This helps restore the skin's natural support structure and improve its appearance.

Angiogenesis: Exosomes promote blood vessel formation by transferring pro-angiogenic factors, such as vascular endothelial growth factor (VEGF), to endothelial cells. Improved blood supply can enhance the delivery of oxygen and nutrients to the skin, promoting healing and rejuvenation.

Immunomodulation and Anti-inflammatory effects: MSC exosomes modulate the immune response, suppressing inflammation and promoting tissue repair. By reducing inflammation, they can help minimize potential side effects and complications associated with skin rejuvenation treatments.

Antioxidant effects: Exosomes protect skin cells from oxidative stress and damage by transferring antioxidant molecules, such as superoxide dismutase (SOD) and glutathione peroxidase (GPx).

EXOHAIR

Exosomes play a key role in hair loss treatment by delivering essential growth factors that stimulate hair follicles and promote tissue regeneration. They also support cell proliferation within the follicles. Furthermore, exosomes help maintain the local environment of the hair follicles, enhancing the inflammatory response and promoting hair growth.

RESULTS

- Improvement of hair density and thickness.
- Reduction of hair loss by regulating the biological processes that lead to the miniaturization of hair follicles, a key factor in androgenic alopecia.
- Activation and proliferation of hair follicle stem cells.
- Neovascularization and enhanced nutrient supply to the hair follicles.

MODE OF ACTION

The mode of action of MSC-derived exosomes for hair loss likely involves several mechanisms, including:

Promotion of hair follicle growth

MSC-derived exosomes contain growth factors and other molecules that can promote hair follicle growth, leading to the regrowth of hair.

Stimulation of angiogenesis

MSC-derived exosomes contain angiogenic growth factors and other molecules that can promote the growth of new blood vessels, which are essential for the nourishment of hair follicles.

Regulation of the hair growth cycle

MSC-derived exosomes can regulate the hair growth cycle, which can help to promote the growth of new hair and prevent hair loss.

Anti-inflammatory effects

MSC-derived exosomes contain anti-inflammatory molecules that can help to reduce inflammation in the scalp, which can contribute to hair loss.

Protection of hair follicle stem cells

MSC-derived exosomes contain molecules that can protect hair follicle stem cells from damage, which can help to promote hair regrowth.

INDICATIONS

Ideal patients for MSC-derived exosome treatment in hair loss may include those who:

Experience androgenetic alopecia: Patients with androgenetic alopecia, also known as male pattern baldness or female pattern hair loss, may benefit from MSC-derived exosome treatment, as it can promote hair follicle regeneration and prolong the anagen (growth) phase of the hair cycle.

Have alopecia areata: Patients with alopecia areata, an autoimmune disorder causing hair loss in patches, may find MSC-derived exosome treatment helpful in reducing inflammation, modulating the immune response, and promoting hair regrowth.

Seek a non-surgical option: Patients looking for a non-surgical alternative to address their hair loss, as opposed to hair transplantation or scalp reduction surgery, may consider MSC-derived exosome treatment.

Have tried conventional treatments without success: Patients who have tried conventional hair loss treatments, such as minoxidil, finasteride, or corticosteroid injections, without satisfactory results may consider MSC-derived exosome treatment as an alternative option.

EXOJOINT

Exosomes derived from mesenchymal stem cells provide a non-invasive solution for treating degenerative cartilage and bone conditions. By modulating inflammation, promoting tissue regeneration, and enhancing intercellular communication, exosomes offer an innovative treatment option for joint and bone diseases. This approach reduces the need for invasive surgery and significantly improves the patients' quality of life.

MODE OF ACTION

Tissue Regeneration - Exosomes contain growth factors, cytokines, and other biomolecules that stimulate the proliferation and differentiation of resident stem cells in bone and cartilage tissues. This process helps regenerate damaged tissues, promoting the formation of new cartilage and improving bone density.

Inflammation Modulation - One of the main benefits of exosomes in degenerative processes is their ability to modulate inflammatory responses. Exosomes can alter the local inflammatory environment by reducing the production of pro-inflammatory cytokines and promoting a more favorable environment for tissue regeneration.

Intercellular Communication - Exosomes act as intercellular messengers, transporting RNA and proteins between cells. This communication is crucial for coordinating tissue repair activities and can influence the tissue's response to damage or degeneration.

Promotion of Angiogenesis - Adequate vascularization is essential for tissue regeneration. Exosomes promote angiogenesis, the formation of new blood vessels, improving nutrient and oxygen supply to damaged tissues, which is crucial for effective regeneration.

ORTHOSKILL IS RECOMMENDED FOR PATIENTS WHO

- **Suffer from osteoarthritis:** Those experiencing pain, inflammation, and joint degeneration can benefit from enhanced cartilage regeneration, reduced inflammation, and immune response modulation.
- **Have tendon or ligament injuries (such as tendinitis, tendinopathies, or partial tears):** Exosome therapy promotes tissue repair and healing while reducing inflammation.
- **Are recovering from bone fractures:** Exosomes aid in bone regeneration and improve angiogenesis, accelerating healing in patients with bone fractures.
- **Have undergone joint prosthetic surgery:** Patients who have had joint replacement surgery can benefit from exosomes by supporting tissue repair, reducing inflammation, and shortening recovery times.
- **Suffer from avascular necrosis:** This condition, in which bone tissue dies due to insufficient blood supply, can be alleviated with exosomes that promote angiogenesis and support bone regeneration.

EXOGYN

Exosomes derived from mesenchymal stem cells offer an innovative approach to treating vaginal aging, addressing the root cause of symptoms rather than just managing the symptoms themselves.

This therapy not only alleviates issues such as dryness and laxity but also promotes long-term vaginal health, significantly improving the quality of life for women affected by these conditions.

Exosomes from mesenchymal stem cells (MSCs) contain growth factors and other bioactive molecules that stimulate collagen production in the vaginal tissue, enhancing its tone and elasticity.

RESULTS

- pH regulation.
- Promotion of vascularization and improvement of blood flow.
- Reduction of inflammation and associated dryness.
- Regulation of hormone levels and reduction of atrophy.
- Restoration of elasticity and tone of vaginal walls after childbirth.
- Rejuvenation of vaginal tissue in postmenopausal women.
- Reduction of incontinence.

MODE OF ACTION

- Exosomes contain growth factors and signaling molecules that stimulate collagen synthesis in fibroblasts. Enhanced collagen production in the vaginal wall increases tissue elasticity and tone, promoting regenerative processes.
- They promote the formation of new blood vessels by transferring pro-angiogenic factors.
- Exosomes suppress inflammation and promote tissue repair without side effects or complications.
- They contain bioactive molecules such as growth factors and microRNA, which stimulate cellular proliferation and collagen synthesis, contributing to improved elasticity and structure of vaginal tissue.
- Exosomes also positively influence the vaginal microflora, promoting a healthy environment and reducing the risk of recurrent bacterial infections.

INDICATIONS

Postpartum women

Women who have experienced changes in vaginal tissue structure and function after childbirth

Postmenopausal women

Hormonal changes during menopause can lead to a decrease in collagen production and thinning of the vaginal tissues.

Women with sexual dysfunction

Some women may experience reduced sexual sensation or discomfort due to changes in the vaginal tissues.

Women with vaginal atrophy or dryness

AD-MSC exosome treatment may help restore vaginal tissue hydration and structure, alleviating symptoms of vaginal atrophy or dryness.

Women with stress urinary incontinence

Some women experience stress urinary incontinence due to weakened pelvic floor muscles and supportive tissues.

EXOAGING

Mesenchymal stem cell (MSC) exosomes have emerged as a therapeutic option for addressing age-related conditions and promoting overall health. The exosomes derived from MSCs have been shown to possess regenerative, immunomodulatory, and anti-inflammatory properties, making them ideal candidates for anti-aging treatments.

INDICATIONS

- Systemic inflammation
- Immune system deficiency
- Loss of cardiorespiratory function
- Poor physical performance
- Fibrosis in organs or tissues
- Loss of elasticity in blood vessels
- Degenerative processes in organs and tissues
- Premature aging
- Prevention of age-related diseases
- Slowing of cognitive functions

MODE OF ACTION

Tissue repair and regeneration

MSC-exosomes carry growth factors, cytokines, and other bioactive molecules that stimulate cell proliferation, migration, and differentiation, ultimately promoting tissue repair and regeneration.

Modulation of inflammation and immune responses

Aging is associated with chronic low-grade inflammation, known as “inflammaging.” MSC-exosomes suppress the activation and function of immune cells reducing inflammation and mitigating age-related tissue damage.

Regulation of cellular senescence

MSC-exosomes modulate the expression of senescence-associated genes and signaling pathways, thereby reducing cellular senescence and its detrimental effects on tissue function.

Promotion of angiogenesis

As the body ages, angiogenesis declines, which can impair tissue repair and contribute to age-related diseases. MSC-exosomes promote angiogenesis by stimulating the proliferation, migration of endothelial cells and increasing the expression of pro-angiogenic factors.

Antioxidant and anti-apoptotic effects

MSC-exosomes enhance cellular antioxidant defenses, scavenge reactive oxygen species (ROS), and modulate signaling pathways involved in apoptosis, thus protecting cells from age-related damage and maintaining tissue function.

Modulation of age-related epigenetic changes

Aging is accompanied by alterations in the epigenome, such as changes in DNA methylation and histone modification patterns. MSC-exosomes can modulate the epigenetic landscape of recipient cells, reversing age-related changes and promoting a more youthful cellular state.

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