The Exosome Revolution in Regenerative Medicine

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Amniotic fluid (AF) has taken the regenerative medicine world by storm over the last decade. It contains a substantial number of growth factors and immune components that provide benefits to a myriad of patients for regenerative purposes. It is readily available, simple to acquire, and satisfies a multitude of indications for achieving human health and vitality. Taking full advantage of its features, Kimera Labs provides three amniotic fluid derived products with varying degrees of potency to support your needs in the practice of Regenerative Medicine.

Key components of commercial AF include:

- Maternal Epithelial Cells
- DMSO
- Growth Factors
- Hyaluronic Acid
- Innate Immune Components: Defensins, etc.
- Exosomes

Maternal Epithelial Cells

One of the myths of amniotic fluid shared across the health industry is that amniotic fluid contains ‘stem cells’ and that these are responsible for the benefits seen in the use of AF. This is simply a myth. The major cellular component of amniotic fluid is the mother’s epithelial cells that slough off into the fluid. In fact, when no infant is present, you can identify the same cells by observing the menses of a female patient. The majority of scientific peer-reviewed articles that discuss amniotic fluid derived stem cells are from early term amnioncetesis, prior to the hardening of the outer layer of the child’s skin. In a poster presented at the 2016 American Association of Tissue Banks conference in New Orleans, LA, 200 ml of fresh C-section derived amniotic fluid was taken directly from the delivery room to the lab and immediately cultured. In 200ml of FRESH AF, 40 mesenchymal stem cell colonies were identified. That is less than 1 MSC per ml, using fresh, non-cryopreserved fluid. Furthermore, these third-party cells would be rejected by the patient’s immune systems.

DMSO

Dimethyl Sulfoxide is a cryo-preservant included in amniotic fluid ostensibly to protect the stem cells discussed in the previous paragraph. The use of DMSO requires that it be used at a 1:1 ratio with the fluid being preserved. In practice, this reduces the amount of amniotic fluid present by half. Further, when cells are taken out of cryopreservation 20-30% of the cells are lost due to the toxic nature of DMSO. Indeed, it is well known that if cells are left in DMSO at room temperature, 100% of the cells will be destroyed. DMSO requires careful handling at 4°C to not be lethal.

Growth Factors

Amniotic fluid has been shown to contain many growth factors including the following: TIMP-2, HGF, TIMP-3, IGF-2, IL-6, GRO-ALPHA, TGF-β3, IL-1Ra, TIMP-4, MCP-1, EGF, TGF-α.

Hyaluronic Acid

A major component of Amniotic fluid, HA cushions the fetus in the womb and can provide that homologous function when used for orthopedic uses.

Innate Immune Components

It is vital that the womb remains a sterile environment for the fetus. Amniotic fluid is comprised of hundreds of proteins, calprotectin and permeability-increasing proteins that can provide an innate immune solution to invading pathogens. These proteins include α-defensins
Exosomes, a technology has created an industry first by understanding how to isolate and concentrate.

We are the exosome experts.

exosomes secreted by mesenchymal stem cells are exosomes secreted by mesenchymal stem cells.

exosomes are comprised of only proteins that also exosomes are comprised of only proteins that are secreted by these vesicles, allowing for their protection from most cell types. Indeed, besides hormones, growth factors, and cytokines, proteins are usually secreted in the cytokines and cytokines.

exosomes are 1000mM liquid vesicles that are secreted by cyto-preservated at 80C until use. For sterilization, this product must be maintained.

This product would contain live cells and has been tested. DMSO is the typical product on the market today.

aminoz is a standard in aminoz with cryo-preserved with cyto-preserv.

Klremo Amino Products:

Then any product on the market today is a boon to the field.

Properties and are a boon to the field.

Surgical aspects is absolutely indicated as pathogen.
Amnio2x provides:
- 2X the growth factors
- 2X the cushioning
- 2X the anti-microbial peptides
- 2X the healing as the leading amniotic fluid products

Potential Clinical Applications:
- Orthopedics
- Neurosurgery
- Spinal Surgery
- General Surgery
- Urology
- Erectile Dysfunction
- Wound Healing

References:
5. Espinoza J, Chaiworaongsa T & Romero R et al. Antimicrobial peptides in amniotic fluid: defensins, calprotectin and


