

2025 SDARTS: Current Medicine & Surgery

***“Value & Uses Of Centrifugation:
Affordable In Small Clinic Settings For
tSVF/cSVF and WHY”***

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Aesthetic & Reconstructive Surgery – Wound Healing
Cellular & Biocellular Regenerative Medicine

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What Is “Biocellular Regenerative Medicine?”

Refers to Combination of Two Elements:

1. AD-tSVF Harvested Subdermal Fat
2. Addition of Biologic Agents:
 1. HD PRP Concentrates
 2. Blood Derivatives: Bone Marrow Concentrates, BMA/BMAC

BACKGROUND: WHAT IS SVF ??

- Complex Aggregation Of Cells & Matrix
- Comprised of Group Of Undesignated Cells Which Are Multipotent and Some Pluripotent
- Include Extensive Intricate Scaffolding (ECM)
- Forms A Key To Homeostasis, Repair, and Healing
- Often Combined With GF, Cytokines, & For Intercellular Paracrine Communication Forms Basis Of Tissue Health

TERMS: tSVF & cSVF

Tissue Stromal Vascular Fraction (tSVF)

- Includes ALL Cellular Components Of Tissue
- Includes ALL Biologic Components
- Includes Native Bioactive Matrix (Secretive)
- Requires NO Manipulation

Cellular Stromal Vascular Fraction (cSVF)

- *Requires Digestion, Incubation, Isolation*
- NO *Native Matrix Component*
- *Value In Tracking & Dose/Response Data Collection*
- *Common Uses Reported In Research Settings*
- *Often Being Use As "Cell-Enrichment" Protocols In Aesthetic, Orthobiologic, and Wound Healing*

CRITICAL TO LEARN

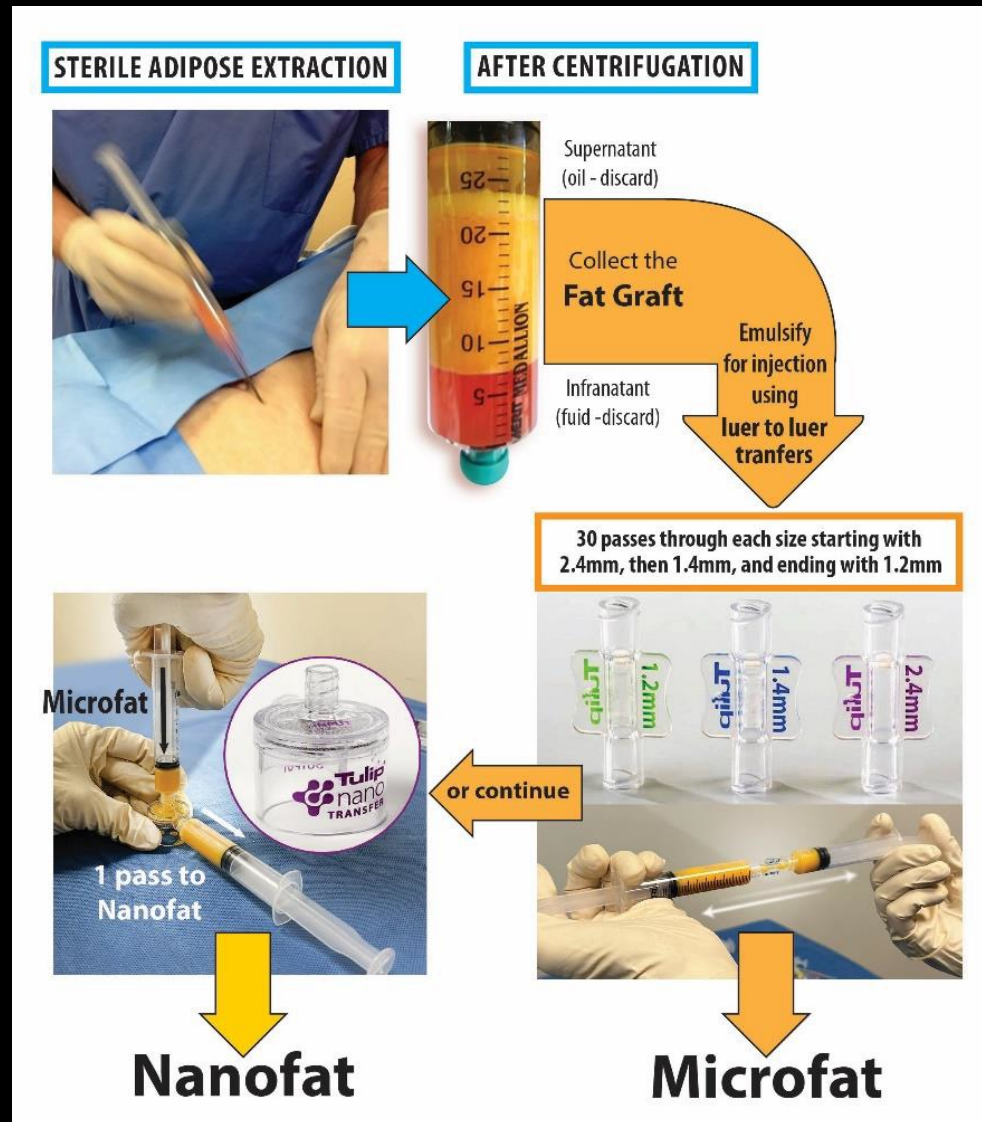
- **Tissue Stromal Vascular Fraction = tSVF**
 - Heterogeneous Group Of Stem/Stromal Cells
 - Attached To ECM (Essential to Proliferation)
 - Attached To Paravascular, Perivascular and Mature Adipocyte Cells
 - Most Potent Cell Group In Regen Medicine
- **Cellular Stromal Vascular Fraction = cSVF**
 - Stem/Stromal Cells ONLY
 - Used For Cell-Enrichment and Systemic Conditions
 - **Documentation, Tracking, & Dose/Response Understanding

Partial Emulsification tSVF



Micronized Fat 40-60% Adipocytes Removed

Processing tSVF To NanoFat



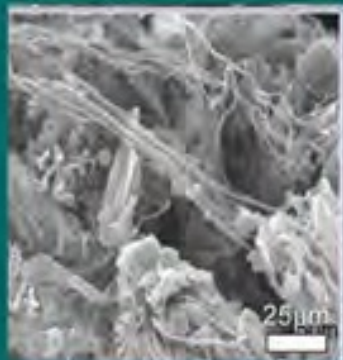
Adapted from Dr D. Alderman (SDARTS 2024)

Full Emulsification tSVF as “NANOFAT”

Emulsified AD-tSVF

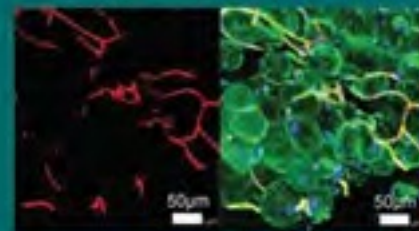


AD-tSVF



Emulsified AD-tSVF

Emulsified AD-tSVF



NON-Emulsified AD-tSVF

Emulsified AD-tSVF

Paravascular Elements



Lectin

Lectin-WGA-Hoechst

WHY CENTRIFUGE ??

Gradient
Density
Separation



VALUE OF CENTRIFUGATION

- Reduce Debris, Local, RBCs In Infranatant
- Allow Avoidance Of Unwanted Free Lipids
- Optional Washing of tSVF If Desired/Needed
- Facilitates Creation “Biocellular” Mixtures
 - Useful in tSVF, Micronized and NANO FAT
 - Resuspends the Harvested Grafts With HD PRP/BMA Blood Derivatives
- Essential In cSVF for Testing OR Enrichments

WHY Cellular Therapy ?

Isolation, Concentration, Testing & Deployment cSVF Derived From tSVF-(NANOFAT)

- 1. Documentation, Dose/Response Potential**
- 2. Cell-Enrichment (Orthobiologic + Aesthetic)**
- 3. Potentials Research & Systemic Uses**

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WHY IS cSVF SO IMPORTANT ?

- Useful To Track Dose/Response Of Treatment
- Can Be Used To Document What Is Delivered
- Excellent Safety Profiles – Autologous ONLY
- Can Be Added To tSVF, Microfat, NANO FAT
- Offers Much Higher Cellular Load To Grafts
- Shown Useful In Aesthetic & Orthobiologic Uses
- Useful In Clinical Trials, IND, RMAT Research

Comparative cSVF Devices

Closed Cellular Isolation



Centricyte 1000
Incubation & Digestion

Predicate Device – NeoGenesis, Korea
UNISTATION – CC1000

NANOSPIN X2



NANOSPIN X2 – United States
Digestion-Incubation cSVF
Gradient Separation - HD PRP

NEW: NANOSPIN X2 CENTRIFUGE

- Head-To-Head Comparative Validated**
- CC1000 vs. NANOSPIN X2 Systems
- Matched Protocols Provided Statistically + Differences In Favor Of the NANOSPIN X2
- Conclusion:

“Strong Statistical Evidence Of Superior Performance & Reliability of NANOSPIN X2 vs CC1000 System, With More Cost-Benefit Analysis + Better Application Testing Results Validated”

**Alexander, unpublished data

NEW: NANOSPIN X2 CENTRIFUGE

Validated Findings: NanoSpin X2 Outperformed:

1. **Greater Performance Superiority**
2. **Greater Operational Efficiency**
3. **Equal OR Greater Reliability**
4. **Better Cost-Benefit Analysis**
5. **Better Application-Specific Testing Results**
6. **More Positive Long-Term Performance Evaluation Favored Over Predicate Device**
7. **Only Heated Chamber Made In USA-Support**

Alexander, unpublished data

ADVANTAGES OF NANOSPIN X2

- Minimal Footprint & Does All Adipose tSVF Uses
- Multiple Functions – Clinic Lab Centrifuge Needs
- Affordable: MUCH Lower Costs Of Equipment
- Creates Density Separation of ALL tSVF and cSVF
- Permits Tracking Dose/Responses To Outcomes
- VERY High Safety Valuation Profile For cSVF Uses
- Create Predictable HD PRP (Emcyte, Arthrex, Etc)
- USA Manufacturer For Machine Support Value

Alexander, unpublished data

REVIEW: MULTIUSE CENTRIFUGES

- Simple Layer Separation of ATC (tSVF Harvest)
- Permits Washing Of tSVF If Needed
- Removal of Cell Debris, RBCs, & Excess Local
- Removal of Unwanted Free Lipids(Supranatant)
- Adapts To HD PRP Systems (Emcyte, Arthrex, Etc.)
- Permits Isolation/Concentration of cSVF
- Allows Cell Counting & Documentation In Cases
- Internal Heated Chamber – Higher Counts

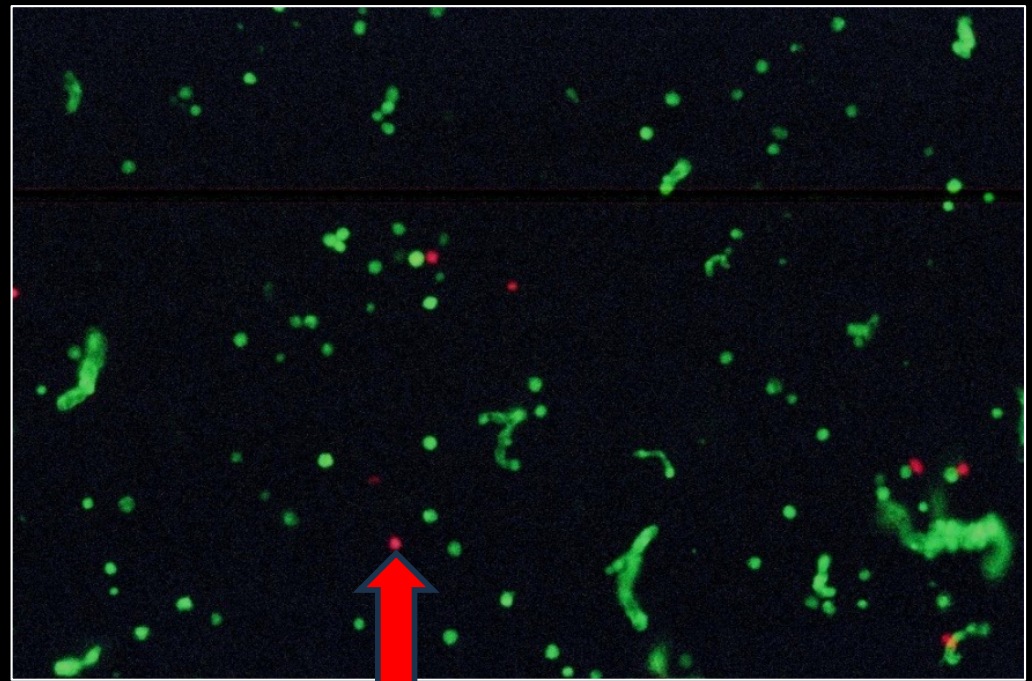
SAFETY Of Systemic cSVF USES

Benchmark Paper:

Habiba UE, Greene DL, Ahmad K, Shamim S, Khan N, Umer A. “Safety of intravenous mesenchymal stem cell therapy: a meta-analysis of randomized controlled trials. Regen Med Reports, (2025); 2(3):83-99.”

Testing Of Stem/Stromal Cells

Flow Cytometer vs Cell Counter Example



AO/PI Florescence

Thank You!



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