Healthier Cells with Akadeum's Microbubbles: A Novel Approach to Gentle and Efficient Cell Isolation

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INTRODUCTION

Akadeum's buoyant microbubble technology offers a simple yet powerful shift in cell separation, negative selection that can be incorporated directly into existing workflows. This approach offers the flexibility for the user to choose what best fits their needs from process development to manufacturing without sacrificing cell health or performance.

- Small scale manual processing
- Manual in-bag closed system
- In-bag with existing instrumentation
- Alerion™ Microbubble Cell Separation System + BioRise™ Consumable

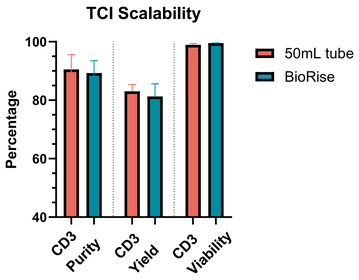
ANY SYSTEM WITH ANY STARTING MATERIAL

With microbubbles, the flexibility isn't limited to how you process but extends to what you process too. Akadeum's kits are robust, enabling the processing of a variety of starting materials.

- Fresh unprocessed apheresis
- Platelet depleted apheresis
- Cryopreserved apheresis
- PBMCs
- Cryopreserved PBMCs

NEGATIVE SELECTION AT SCALE

Microbubbles allow for easily scalable negative selection workflows with Akadeum's Human T Cell Leukopak Isolation Kit (TCI) from process development to clinical manufacturing. The below data demonstrates consistent performance when processing 500 million cells in a 50 mL conical tube or 15 billion cells in a BioRise™ consumable.



CONTACT INFORMATION

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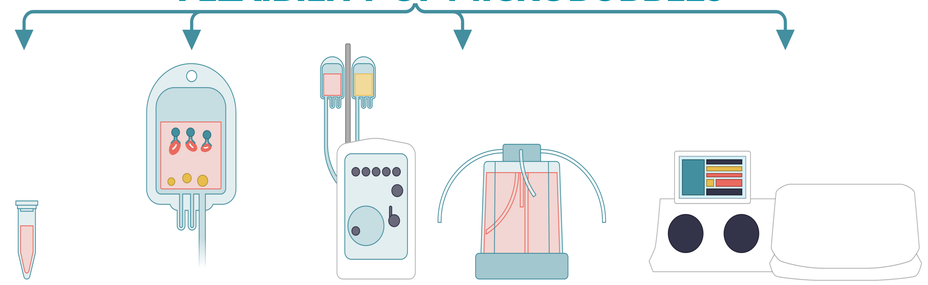
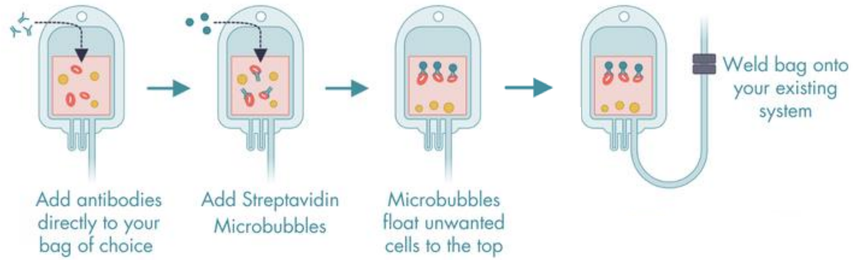
FLEXIBILITY OF MICROBUBBLES



WORKFLOW



INSTRUMENT FREE PROCESSING

Figure 1. High post-isolation CD3+ purity and viability CD3+ cells were isolated using Akadeum's TCI kit and apheresis from two donors. Apheresis was not pre-processed before beginning isolation. Average post-isolation purity and viability were 91.8% and 99.8%, respectively.

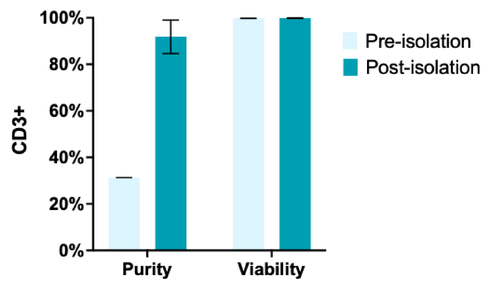
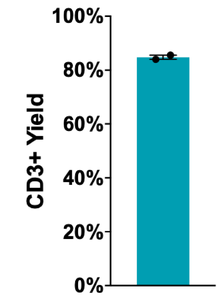


Figure 2. Microbubbles provide more cells for therapeutic doses CD3+ cell yield post-isolation average is 84.8%. N = 2.



INTEGRATE MICROBUBBLES

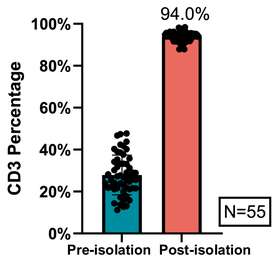


Figure 3. Consistently high CD3+ cell purity Apheresis material from 55 donors was processed using Thermo Fisher's Rotea system for platelet depletion, followed by T cell isolation with Akadeum's TCI kit. Average CD3+ cell purity was 94%, demonstrating the reliability and efficiency of integrating microbubbles into existing workflows.

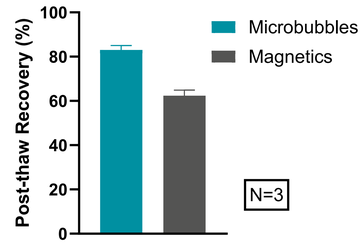


Figure 4. Microbubbles maintain cell health CD3+ cells were isolated from platelet depleted apheresis material from three donor. Post freeze/thaw recovery demonstrated microbubbles are gentler on cells compared to magnetic methods.

ALERION™ MICROBUBBLE CELL SEPARATION SYSTEM

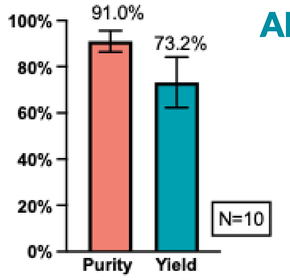


Figure 5. Consistent performance by first-time Alerion™ users Apheresis material from 10 donors was processed by first-time users of Akadeum's microbubble technology and Alerion™ platform. Platelet depletion was performed using either Fresenius Kabi's LOVO system, Thermo Fisher's Rotea™, or a standard centrifugation protocol. CD3+ T cells were subsequently isolated using Akadeum's TCI kit. Average CD3+ cell purity was 91% and the average yield was 73.2%. These results demonstrate the robust and consistent performance of microbubble-based separation technology, even in workflows conducted by users with no prior experience.

CONCLUSIONS

MICROBUBBLE FLEXIBILITY

- Any standard bag
- Any welder system
- Scalable >100B Cells
- GMP and Clinical Ready
- Closed system workflows
- Consistent high performance
- Significantly reduce time

COMPATIBILITY EXAMPLES:

- Thermo Fisher's Rotea™
- Cytiva's Sepax™
- Lonza's Cocoon™
- Terumo's Optia™ & Quantum™
- Fresenius Kabi's LOVO™
- MaxCyte's Electroporation System
- Wilson Wolf G-Rex®

GMP

Akadeum GMP products are manufactured according to cGMP at Akadeum Life Sciences, Ann Arbor, MI, under a quality management system in compliance with 21 CFR 820, 211, 210 and 11. They are developed following USP <1043> and ISO 20399 recommendations on ancillary materials.