

CASY^{VIVO} Cell Counter & Analyzer - Powering Breakthroughs in Cell Research

Standardize PBMC and Monocyte Counts for Osteoclast Scaffold Study

Immunology; Monocytes; PBMC; Standardization	
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Spreda et al. (2021). Porous 3D Scaffolds Reduce Osteoclast Activity; Molecules, 26(8):2240. DOI: 10.3390/molecules26082240.

The Challenge:

Accurately counting human PBMCs post-isolation to standardize concentration for monocyte enrichment and then counting purified monocytes for precise seeding onto scaffolds.

CASY's Contribution:

CASY was used to determine the cell number of PBMCs after density gradient centrifugation, allowing normalization to 5×10^7 cells/mL for monocyte isolation². It was then used again to count the purified monocytes, ensuring a precise seeding density of 200,000 cells onto the test scaffolds for the osteoclast differentiation experiment.

Key Benefits to Researchers:

- **Accuracy:** Provided precise cell counts to standardize the starting PBMC population, ensuring reproducible monocyte isolation.
- **Standardization:** Enabled rapid, label-free counting of purified monocytes, ensuring a precise seeding density (200,000 cells) onto all scaffolds for the osteoclast differentiation assay.
- **Reliability:** This accurate seeding was essential to validate the findings, which showed that the porous 3D structure reduced osteoclast activity (TRAP5b, CtsK) compared to controls.

CASY-based standardization was essential for precise monocyte seeding and reproducible experimental outcomes. These figure shows a resulting key finding on reduced osteoclast activity (TRAP5b).

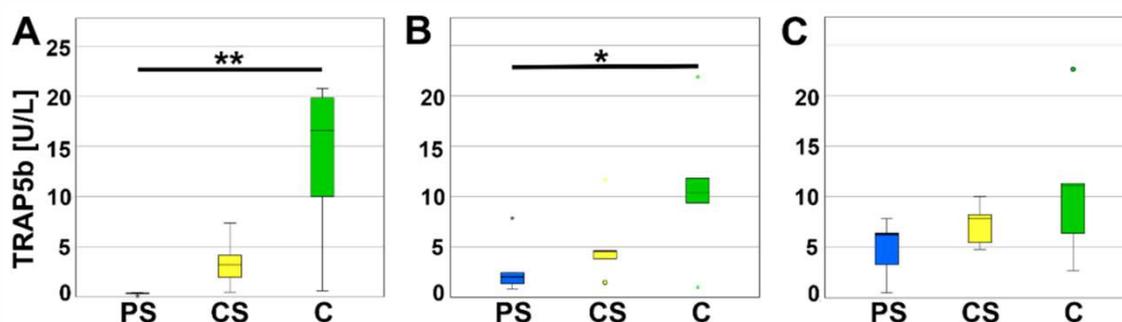


Figure 6. TRAP5b assay after 4 (A), 8 (B), and 12 days (C).

* indicates a statistically significant likelihood of $p \leq 0.05$,

** indicates a statistically significant likelihood of $p \leq 0.01$. Circles and small asterisks denote outliers.