APPLICATION NOTE

ACOU**WASH**

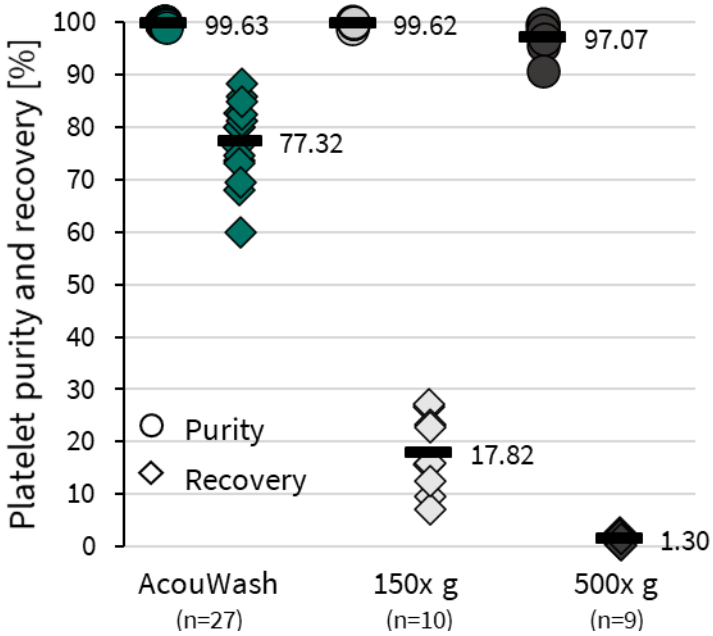
PLATELET SEPARATION FROM BLOOD

Gentle Acoustic Separation using AcouWash

Platelets are small discoid shaped cell fragments which play an important role in homeostasis, thrombosis, cell regeneration, and angiogenesis among other. Platelets are routinely used in clinical applications and have gained increased attention in basic research such as a potential biomarker source. The AcouWash offers a simple, label-free, highly efficient separation of platelets from whole blood without inducing platelet activation and with preserved activation capacity post separation.

Highly efficient platelet separation using the AcouWash

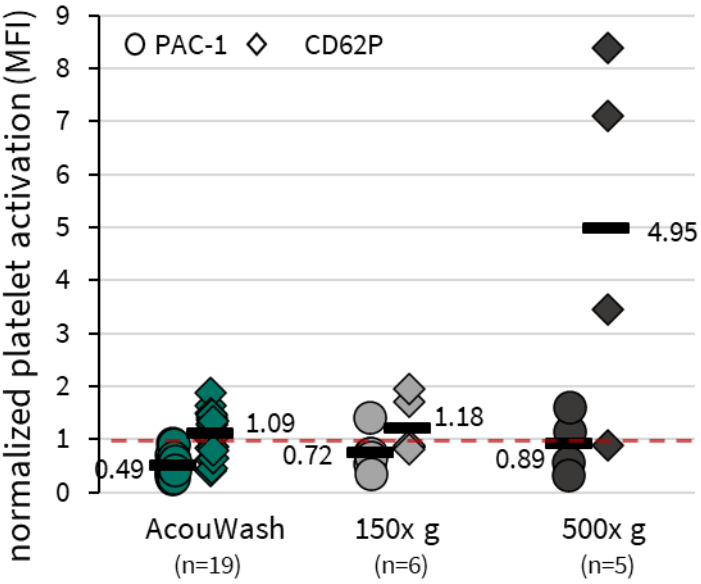
- >99% platelet purity
- <0.1% WBC contamination
- >99% RBC removal
- High platelet recovery
- Suitable for small sample volumes
- Reducing manual handling steps



Human whole blood was mixed with one part of PBS and processed in the AcouWash at 100 µL/min. In comparison, centrifugation of blood samples was performed in a swing bucket rotor for 20 min either at 150x g or 500x g. Input and output samples were stained for CD45, CD61, and CD235a and analyzed by flow cytometry using a BD FACS Canto II. Data is presented for each individual experiment and the number indicates the mean of the population.

AcouWash does not induce platelet activation

- Platelet activation is not induced using the AcouWash
- ADP induced platelet activation of separated platelets comparable to sample input
- Better preserved activation capacity in AcouWash as compared to centrifugation



Comparison separation performance

		AcouWash	150x g, 20min	500x g, 20min
Purity [%]		99.6 ± 0.3	99.6 ± 0.4	97.1 ± 2.8
Recovery [%]		77.3 ± 7.2	17.8 ± 7	1.3 ± 0.8
WBC contamination [%]		0.02 ± 0.02	0.01 ± 0.01	0.04 ± 0.05
RBC contamination [%]		0.35 ± 0.27	0.37 ± 0.41	2.88 ± 2.79
Platelet activation [MFI, normalized]	PAC-1	0.49 ± 0.19	0.72 ± 0.33	0.89 ± 0.50
	CD62P	1.09 ± 0.40	1.18 ± 0.46	4.95 ± 2.96
ADP induced platelet activation [MFI, normalized]	PAC-1	0.98 ± 0.37	0.69 ± 0.16	0.28 ± 0.34
	CD62P	0.72 ± 0.19	0.76 ± 0.35	0.39 ± 0.25

Platelet activation was measured by the expression of activation specific proteins. Input and output samples were stained for CD61, CD62P (P-selectin), and PAC-1 (glycoprotein IIb/IIIa) and analyzed by flow cytometry using a BD FACS Canto II. To investigate the activation capacity of platelets, input and output samples were stimulated with 20 µM adenosine-5'-diphosphate (ADP) and analyzed by flow cytometry using the same activation markers. The antibody expression in median fluorescence intensity (MFI) of the output sample is normalized to the MFI of the corresponding input control. Data is presented as the mean ± SD.