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Data Article

Data on the fate of MACS® MicroBeads intramyocardially co-injected with stem cell products

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ABSTRACT

The data presented in this article are related to the research article "Intramyocardial Fate and Effect of Iron Nanoparticles co-injected with MACS® purified Stem Cell Products" (Müller et al., 2017) [1]. This article complements the cellular localization of superparamagnetic iron dextran particles (MACS® MicroBeads) used for magnetic activated cell sorting (MACS®). Data evaluate the time-dependent detachment of these nanoparticles from CD133$^+$ haematopoietic stem cells (HSCs) and CD271$^+$ mesenchymal stem cells (MSCs). Furthermore, the influence of these stem cells as well as of nanoparticles on cardiac remodeling processes after myocardial infarction (MI) was investigated.

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Specifications Table

Subject area	*Biology*
More specific subject area	*Intramyocardial transplantation of MACS® purified stem cell products*
Type of data	*Image, graph, figure, text file*
How data was acquired	*Structured illumination microscopy (Zeiss ELYRA PS.1 LSM 780), flow cytometry (BD LSR-II), histological staining*
Data format	*Analyzed*
Experimental factors	*CD133$^+$ and CD271$^+$ stem cells were automatically (using the CliniMACS® Prodigy BM-133 system) and manually (using Mini MACS® technology) isolated from human bone marrow (BM)*
Experimental features	*Investigation of the Intracellular localization and time-dependent detachment of MACS® MicroBeads from stem cells using the Labeling Check Reagent-FITC (Miltenyi Biotec). Impact of MACS® MicroBeads on collagen deposition after myocardial infarction using an ischemia/reperfusion mouse model and Sirius Red staining.*
Data source location	*Rostock University Medical Center, Schillingallee 69, 18057 Rostock, Germany*
Data accessibility	*The data are available with this article*

Value of the data

- MACS® is the most commonly used technique for the purification of stem cell subpopulations intended for the treatment of cardiovascular diseases.
- Data about the binding of MACS® MicroBeads to stem cells are crucial for *in vivo* application of stem cell products.
- Data provide information about the effect of co-injected MACS® MicroBeads on cardiac remodeling processes after MI.
- Data can be useful for other researchers analyzing the cardiac regeneration potential of MACS® purified stem cells products.
- Data clarifies the safety of MACS® MicroBeads for clinical application.

1. Data

The data include information about the cellular localization of MACS® MicroBeads (labelled with Labeling Check Reagent-FITC) right after the manual MACS® based isolation of CD133$^+$ and CD271$^+$ stem cells (Fig. 1). The detachment of FITC-labelled MACS® MicroBeads was evaluated by measuring the time-dependent fluorescence intensity of MACS® purified CD133$^+$ cells incubated under cell culture conditions (37 °C in StemSpan™ H3000) using flow cytometry (Fig. 2). Furthermore, the effect of manually and automatically (Good Manufacturing Practice (GMP)-conform) MACS® purified CD133$^+$ and CD271$^+$ stem cells as well as of MACS® MicroBeads on fibrosis after MI was assessed in a cardiac ischemia/reperfusion mouse model by histological staining (Fig. 3).