viscover

FeraSpin™ T:

MRI agent for *in vitro* labeling

1 vial (5 x 100 µL injections) # 130-095-703
5 vials (25 x 100 µL injections) # 130-095-704

Contents

1. Description

Components **1 mL FeraSpin™ T,** MRI agent (superparamagnetic iron oxide nanoparticles); **10 mL FeraSpin™ T**, dilution medium
or
5 × 1 mL FeraSpin™ T, MRI agent (superparamagnetic iron oxide nanoparticles); **5 x 10 mL FeraSpin™ T**, dilution medium.

Capacity **For 1×10^6 cells,** up to 10 tracking experiments
or
for 5×10^6 cells, up to 50 tracking experiments.

Product format FeraSpin™ T is supplied as a sterile buffered solution with an iron concentration of 54 mM and a dilution medium. After dilution, the solution has an iron concentration of 5.4 mM.

Appearance Dark brown liquid and clear, colorless liquid. After dilution: Clear, amber liquid.

Storage Store protected from light at 2–8 °C. Do not freeze. The expiration date is indicated on the vial label.

For laboratory and animal research use only. Warning: Not for human or animal therapeutic or diagnostic use. In case of *in vivo* application, make sure to comply with all laws and regulations governing research on animals.

1.1 Background information

FeraSpin T is a superparamagnetic iron oxide nanoparticulate agent specifically formulated for *in vitro* labeling of cells. It has been developed not only to enable efficient uptake by various cell types without the need of a transfection agent but also to deliver optimal MRI contrast.
On injection of the labeled cells into small animals, the cells can be detected through the decreased signal intensity on T1, T2, and T2*-weighted images.

1.2 Applications

FeraSpin™ T is indicated for use in *in vitro* cell labeling and subsequent *in vivo* MRI tracking of the labeled cells. Examples include labeling of stem cells, primary cells, or cell lines to monitor the localization, migration, or proliferation of cells *in vivo.*

1.3 Physico-chemical properties

Mean particle size: 60 nm (hydrodynamic diameter).
Narrow size distribution.

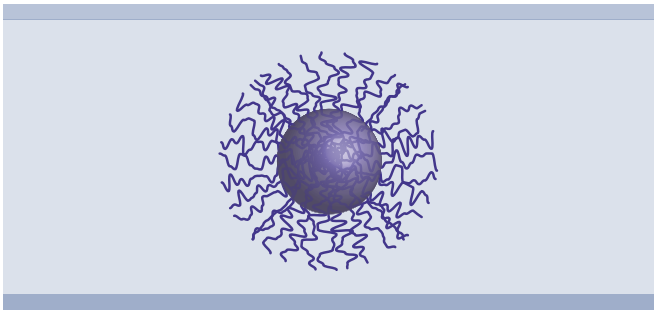

Figure 1: Schematic diagram of a FeraSpin T nanoparticle

1.4 Requirements

- Polystyrene cell culture dish, e.g., 6-well plate
- Cell culture medium
- Pipette and tips
- 1.5 mL or 2 mL microcentrifuge tubes
- Standard CO_2 incubator
- Phosphate-buffered saline (PBS)
- Sterile syringes and needles (27–30 G)

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2. Protocol

2.1 General advice

- Read the entire protocol before starting.
- Apply the aseptic technique throughout the experiment to ensure sterility of FeraSpin T MRI agent, FeraSpin T dilution medium and cell cultures.
- In case of *in vivo* application of labeled cells, standard animal handling procedures and local regulations must be followed.

2.2 Cell preparation

- Adherent cells: Plate 1×10^5 cells per 9 cm^2 cell culture dish (6-well plate) in 2 mL cell culture medium one day before labeling to ensure 90% confluency at the time of labeling.
- Suspension cells: Plate 1×10^5 suspension cells per 9 cm^2 cell culture dish (6-well plate) in 2 mL cell culture medium at least 10 minutes prior to labeling.

2.3 Cell labeling

- Vortex the FeraSpin T MRI agent and FeraSpin T dilution medium vials to ensure thorough mixing.
- Using a pipette with tip withdraw 100 µL FeraSpin T MRI agent and transfer to a microcentrifuge tube.
- Prepare the labeling mix by transferring 900 µL FeraSpin T dilution medium to the microcentrifuge tube containing FeraSpin T MRI agent.
- Vortex the tube to homogenize the labeling mix.
- Add the labeling mix (1000 µL) to the cell culture dish to obtain a final volume of 3 mL/well, corresponding to an iron dose of 300 µg Fe/1×10^5 cells and a final concentration of 100 µg Fe/mL.
- Incubate cells in a CO_2 incubator at 37 °C for a total of 24 hours.
- Wash cells at least twice with PBS.
- Add cell culture medium to the labeled cells for subsequent cultivation steps or harvest cells for alternative downstream applications.

Note: Depending on the cell type, the labeling efficiency may be increased by prolonged incubation time and/or elevated iron dose.

2.4 Imaging

- Imaging can be performed on a multitude of devices at all commonly used field strengths including high-field MRI.
- FeraSpin T is particularly suited for T2- and T2*-weighted MRI.
- Using a syringe with needle, inject FeraSpin T-labeled cells into the mouse e.g., via the lateral tail vein or directly into the tissue of interest.
- Taking a pre-contrast image is recommended.
- The time interval between injection and imaging depends on the application. For visualization of cell migration from the injection site begin imaging immediately after injection.

Find examples of studies involving FeraSpin T at www.viscover.berlin.

3. References

1. Jones, J. *et al.* (2015) Mesenchymal Stem Cells Improve Motor Functions and Decrease Neurodegeneration in Ataxic Mice. Mol. Ther. 23(1): 130–138.
2. Kraupner, A. *et al.* (2017) Nanoparticles optimized for efficient stem cell labeling and possessing optimal contrast properties for MRI and MPI. https://www.viscover-online.de/data-gallery/mpi/feraspin-t/a-1237/.

4. Related products

GadoSpin™ P	# 130-095-136, # 130-095-137
GadoSpin™ V	# 130-095-705, # 130-095-706
GadoSpin™ F	# 130-095-162, # 130-095-163
GadoSpin™ D	# 130-095-164, # 130-095-165
GadoSpin™ M	# 130-095-134, # 130-095-135
FeraSpin™ R	# 130-095-138, # 130-095-139
FeraSpin™ XS	# 130-095-140, # 130-095-141
FeraSpin™ S	# 130-095-166, # 130-095-167
FeraSpin™ M	# 130-095-168, # 130-095-169
FeraSpin™ L	# 130-095-170, # 130-095-171
FeraSpin™ XL	# 130-095-172, # 130-095-173
FeraSpin™ XXL	# 130-095-174, # 130-095-175

A comprehensive product portfolio for the imaging modalities MRI, CT, US, OI, SPECT, and PET is available at **www.viscover.berlin**.

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