

Supplementary Materials

Table S1. Physico-chemical properties of superparamagnetic iron oxide MR contrast agents used in this study.

Name	Coating	Hydrodynamic Size (nm)	Surface Charge (mV)	$r1^{\S}$ (s^{-1}/mM)	$r2^{\S}$ (s^{-1}/mM)	Reference
Endorem	Dextran	80–150 nm	-32.24 ± 0.67	24 ± 2	98 ± 5	[1-3]
Resovist	Carboxydextran	45–62 nm	-4.4 ± 2.59	25 ± 3	151 ± 6	[1, 2, 4]
Cationic MLs	Phospholipids	40 nm	31.3 ± 7.3	15 ± 2	240 ± 8	[5-7]

§ 1.5 T, 37 °C.

Figure S1. Quality assessment for Resovist and Endorem. T2 values determined at 9.4T using in PBS.

Contrast agent/ Date [months]	Hydrodynamic diameter [nm]	Surface charge [mV]	r_2 [$s^{-1} mM^{-1}$]
Resovist			
Time of purchase	55 ± 10	-4.4 ± 2	155 ± 20
24 months	50 ± 8	-5 ± 2	140 ± 15
38 months	58 ± 5	-5 ± 1	130 ± 15
54 months	48 ± 6	-6 ± 2	148 ± 12
68 months	52 ± 5	-5 ± 2	119 ± 20
82 months	58 ± 5	-4 ± 1	135 ± 15
98 months	54 ± 4	-5 ± 1	140 ± 15
Endorem			
Time of purchase	120 ± 30	-32.2 ± 1	110 ± 5
24 months	130 ± 20	-30 ± 3	110 ± 10
38 months	100 ± 20	-33 ± 5	95 ± 15
54 months	145 ± 20	-30 ± 4	90 ± 18
68 months	125 ± 20	-35 ± 4	102 ± 10
82 months	140 ± 30	-32 ± 3	111 ± 12
98 months	130 ± 20	-33 ± 3	100 ± 10

Figure S2. T2 values were determined from multi-slice-multi-echo MRI experiments for the different labeling conditions. INS-1E cells were distributed in agar at a concentration of 500 cells/ μL . All cells were labelled with 50 μg Fe/mL medium. T2 values represent mean values $\pm$ SD ($n=3$).

Labeling condition	T2 values [ms]
ML (4 hours)	35 $\pm$ 4 ms
ML (24 hours)	30 $\pm$ 4 ms
Endorem (24 hours)	100 $\pm$ 10 ms
Resovist (24 hours)	110 $\pm$ 15 ms
Endorem + PLL (24 hours)	18 $\pm$ 5 ms
Resovist + PLL (24 hours)	24 $\pm$ 5 ms
Unlabeled controls	140 $\pm$ 8 ms

References

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