

The behavior of Jurkat cells with superparamagnetic nanoparticles in magnetic field

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T lines - Jurkat cancer cells (diameter about 15 μm) were fed Fe_2O_3 magnetic NanoParticles NPs (diameter about 10 nm). Transfection and incubation of these cells with NPs were performed. Behaviors of these cells, deposited in culture-liquid medium, were studied in the following surrounding: (i) single small neodymium magnets plate; (ii) magnetic matrix - teflon plate with small cylindrical neodymium magnets and (iii) surface of thin garnet film with labyrinth domain structure (with period above 100 μm). All experiments were performed in function of time and NPs concentration Fe_2O_3 (100 $\mu\text{l/ml}$, 500 $\mu\text{l/ml}$) using different optical microscopy techniques. Real time movements of NPs fed cells in magnetic field gradient were observed and recorded in the aqueous suspensions. Followed incubation, majority of the NPs loaded cells were confined to the surface of the cylindrical magnets.