Kinetic analysis of particle uptake to macrophage by confocal microscopy

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Recently several substrates for drug delivery such as chitosan, liposome, PLLA (poly-L-latide) and PLGA (poly latic co-glycolic acid) have been developed. Liposome is one of the most focused carrier because of its high drug capacity and biocompatibility. Hydrophilic drug such as proteins could be encapsulated inside liposome; hydrophobic drugs such as chemical anticancer drug between layers. When drug carriers are introduced to bodies, it is exposed to RES (reticuloendoetherial system). Therefore, we need to develop stable carrier to macrophage. In this study, RAW-264.7 cell line (murine macrophage cell) was used as a model cell line. As carrier, different sized of liposomes were used for evaluating the effect of carrier size against macrophage cell. Liposome was produced with DPPC (dipalmitoylphosphatidylcholin), cholesterol and DCP. Cy5 fluorescent dye was encapsulated inside liposome. Sephadex G-25 (GE healthcare, USA) was used for removing Cy5 not entrapped. The sizes of liposome were 100, 200, 400, and 800 nm. The size of liposomes was measured by DLS (dynamic light scattering). By time lapse, the uptake of liposome particles by RAW-264.7 cell was monitored by confocal microscopy.