

SIZE- AND SURFACE-DEPENDENT UPTAKE OF COLLOID PARTICLES INTO THE LYMPHATIC SYSTEM**F. Ikomi, G.K. Hanna, G.W. Schmid-Schönbein**

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ABSTRACT

PURPOSE: To examine the effect of particle size and surface characteristics on colloidal particle uptake from subcutaneous tissue into the lymphatic system.

MATERIALS AND METHODS: Perfluorocarbon emulsion ZY13163 (median particle diameter, 0.08 μm ; surfactant, egg yolk phospholipid), ZY13164 (median particle diameter, 0.36 μm ; surfactant, egg yolk phospholipid), ZY13199 (0.18 μm , surfactants Tetronic904) and ZY14001 (0.11 μm , surfactant Pluronic L121) were individually injected into the dorsal skin of the hind foot of rabbits. Lymph flow rates and particle concentrations were determined in prenodal lymph fluid after injection, with and without massage of the skin over the injection site.

RESULTS: In the first 24 hours after injection, the decreasing order of colloid flux without massage was as follows: ZY13199 > ZY14001 > ZY13163 > ZY13164. Lymph flow rates, lymph leukocyte concentrations and colloid concentrations increased substantially with mechanical skin massage.

CONCLUSIONS: Transport of colloids into lymphatic vessels depends on particle size and surface characteristics. Without massage, colloids with egg yolk phospholipid exhibit size dependent decrease in uptake into lymphatics, while with massage only a weak correlation with particle size is present.