

マイクロスフィアと血液成分との相互作用 II : マクロファージによる生体内分解性粒子の取り込み

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Interaction of Microspheres with Blood Constituents II: Uptake of Biodegradable Particles by Macrophages

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ABSTRACT: The interaction of a poly(glycolic acid) biodegradable matrix with macrophages was studied in cell cultures using transmission and scanning electron microscopy as well as light microscopy. Phagocytosis was observed after as little as 10-min incubation time and as incubation time increased, the number of particles discernible within the cells also increased. The particles were identified in the cytoplasm enclosed within the lysosomal membrane. Cell death was evident after 48-hr incubation, following coalescence of macrophages in both the control and the test cells. Tissue distribution was evaluated for the biodegradable particles following intravenous injection. Localization was predominantly in the liver and spleen with some particle aggregates discernible within pulmonary capillaries 24 hr after injection. By 6 hr, particles were found within lysosomes in the cytoplasm of both monocytes and Kupffer cells in the liver. By 1 week some evidence of particle degradation was observed in lysosomes of Kupffer cells, while residual particles were no longer discernible after 2 weeks.

抄録 ポリグリコール酸で調製した生体内分解性マトリックス微粒子とマクロファージとの相互作用を細胞培養で検討し、透過型・走査型電子顕微鏡観察で評価した。マクロファージの食作用は微粒子を注加して10分後から観察され始め、培養時間が長くなるにつれてマクロファージに取り込まれる粒子数は増加した。微粒子はマクロファージの細胞質中にライソソーム膜で包まれて存在しているのが認められた。一方、マウスに微粒子を静注し、体内分布を観察したところ、投与後24時間では、ほとんどの粒子が肝臓・脾臓内に認められた。投与後

6時間では、肝臓内の単核球中と Kupffer 細胞中に認められた。投与 1 週間後の標本では、粒子が生体内で分解した様子が Kupffer 細胞中のライソソーム膜中に認められた。2 週間目の標本では、微粒子の存在はもはや認められなかった。

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