

Poly- α , β -[N(2-hydroxy-ethyl)-D, L-aspartamide]の
気道保持と肺吸収

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Airway Retention and Pulmonary Absorption of
Poly- α , β -[N(2-hydroxy-ethyl)-D, L-aspartamide]

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ABSTRACT Coarse aqueous sprays of the poly- α , β -[N(2-hydroxy-ethyl)-D, L-aspartamide], (PHEA), containing a covalently bound fluorophore, ethyl carbonyl-6-aminofluorescein, were administered in doses ranging 2.2 through 3.6mg to the airways of the isolated rat lung (IPRL). The polymer was characterized with number and weight averaged molecular weights of 5300 and 8600 Daltons, respectively. Transfer to the perfusate supplying the pulmonary circulation was monitored with time in order to assess the polymer's systemic absorption potential and the transferred molecular weight distributions (MWD). The polymer was absorbed at an apparently constant rate during each experiment. The MWD of absorbed material was characterized by gel permeation chromatography and found to be shifted toward lower molecular weights when compared to that of the administered polymer. Two hours after dosing, absorbed material had mean values for weight mean molecular weight, $M_w=6670\pm 526$ Daltons and number mean molecular weight, $M_n=4680\pm 640$ Daltons where the ranges are standard deviations in 8 IPRL preparations. PHEA was not metabolized in the 3h duration of an experiment and there was some tendency for the median molecular weight of the absorbed material to increase with time after administration. Results are discussed in the context of macromolecular to the systemic circulation via the lung.

抄録 蛍光標識したpoly- α, β -[N(2-hydroxy-ethyl)-D,L-aspartamide](PHEA)の水溶液を噴霧器を用い、ラット摘出肺の気道より投与した。気管から還流液へのPHEAの移行を測定し、吸収性や分子量分布について評価した。PHEAの吸収速度はみかけ上一定であり、還流液中の分子量分布は投与液中のそれに比べ低分子側へシフトしていた。投与2時間後の還流液中のMwは $6,670 \pm 526$ Daltons (Da) (投与液中: $8,600$ Da), Mwは $4,680 \pm 640$ Da (投与液中: $5,300$ Da)であった。また、PHEAは代謝を受けず、吸収されたものの中央分子量は時間の経過と共に増大する傾向を示した。結果は、肺を経て全身循環への高分子のデリバリーという点において議論されている。

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