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可溶的和纤维化的Aβ_{1-40}对膜脂的通透性的影响

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利用光散射，浊度，荧光以及电镜等技术研究了可溶性的Aβ_{1-40}聚集形成纤维的动力学过程；用三种水溶性的分子质量不同的荧光探剂ANTS/DPX，Calcein，Dextran FD-4包裹在脂质体内，检测可溶的和纤维化的Aβ_{1-40}对其内含物漏出的影响。结果表明：可溶性的Aβ_{1-40}在pH7.4，37℃温育4天以后开始聚集，7天后形成稳定的纤维；聚集的Aβ_{1-40}能够诱导包裹在脂质体内的ANTS/DPX，Calcein的漏出，但不能诱发Dextran (FD-4)的漏出，并初步估算出聚集的Aβ_{1-40}在膜上能产生孔径为13-18Å的小孔，而可溶的Aβ_{1-40}无此作用。这提示我们，聚集成纤维的Aβ_{1-40}能改变膜脂的物理化学性质，并造成内含物的漏出，这些作用可能是造成神经细胞毒性的重要原因。

THE EFFECT OF SOLUBLE AND FIBRILAR Aβ_{1-40} ON MEMBRANE PERMEABILITY

The time course of Aβ_{1-40} fibril formation was characterized using a variety of assays. The effect of soluble and fibrillar Aβ_{1-40} on the membrane permeability was assessed by measuring the release of vesicle-entrapped with three different molecular weight fluorescence probes (ANTS/DPX, Calcein, FD-4). The results showed that fibrils had formed after 4 days. Aggregated Aβ_{1-40} may induce the leakage of ANTS and Calcein in a dose-dependent manner, but soluble Aβ_{1-40} had no such effect. It suggests that the change of physico-chemical properties of membrane constituents may have some relation to Aβneuro-toxicity.

关键词

可溶的Aβ_{1-40}(Soluble Aβ_{1-40})；纤维化的Aβ_{1-40}(Fibrilar Aβ_{1-40})；膜脂(Membrane)；漏出(Leakage)