

论文

蝙蝠葛苏林碱及异构体对PC12细胞缺血性损伤的保护作用

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摘要:

用细胞培养术,以NaCN加缺糖引起PC12细胞损伤作为细胞缺血性损伤的模型,观察蝙蝠葛苏林碱(DS)及其3个光学异构体对PC12细胞缺血性损伤的保护作用;以Fura-2/AM为Ca²⁺的荧光探针,用AR-CM-MIC阳离子测定系统观察DS及异构体对NaCN引起的Ca²⁺内流的抑制作用。结果表明DS及3个异构体在10⁻⁸~10⁻⁵mol·L⁻¹的浓度范围内对PC12细胞损伤有较明显的保护作用,其机制之一与抑制NaCN加缺糖诱发的细胞内游离Ca²⁺异常升高有关。

关键词: 蝙蝠葛苏林碱 嗜铬细胞癌PC12细胞 细胞培养 细胞内游离Ca²⁺ 兴奋性氨基酸

EFFECTS OF DAURISOLINE AND ITS THREE OPTICAL ISOMERS ON ISCHEMIC INJURY IN CULTURED PHEOCHROMOCYTOMA (PC12) CELLS

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Abstract:

In this study, the protective effects of (-)-R-R-DAURISOLINE and its three optical isomers on ischemic injury in cultured PC12 cells induced by treating cells with NaCN in glucose-free medium were investigated. Cell viability was measured using MTT assay. The results indicated that these compounds, especially (-)-S-R and (+)-R-S isomers were found substantially to attenuate ischemic injury in PC12 cells in a dose-dependent manner. The IC₅₀ values of (-)-R-R, (-)-S-R, (+)-R-S and (+)-S-S isomers were shown to be 18.6×10⁻⁶, 2.4×10⁻⁶, 5.9×10⁻⁶ and 90×10⁻⁶ mol·L⁻¹, respectively. Intracellular free Ca²⁺ concentration in PC12 cells was measured using AR-CM-MIC cation measurement system with Fura-2/AM as Ca²⁺ fluorescent indicator. (-)-R-R-DAURISOLINE and its three optical isomers: (-)-S-R, (+)-R-S and (-)-S-S were found to markedly inhibit the increase of cytosolic free Ca²⁺ concentration induced by NaCN (20 mmol·L⁻¹) in a dose-dependent manner. Their IC₅₀ were found to be 3.55×10⁻⁶, 0.59×10⁻⁶, 1.29×10⁻⁶ and 24.3×10⁻⁶ mol·L⁻¹ respectively. It is suggested that the cytoprotective effects of DAURISOLINE and its isomers were mediated by blocking Ca²⁺ influx into cells.

Keywords: Excitatory amino acid Cell culture Pheochromocytoma cells(PC12) Intracellular free Ca²⁺ Daurisoline

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