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论著

远志皂苷元对新生大鼠皮质神经元的营养作用

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摘要

目的 研究远志皂苷元(senegenin)对新生大鼠皮质神经元的神经营养作用。**方法** 原代培养新生24 h内SD大鼠皮质神经元，采用0.4% B27+DMEM/F12培养基制备营养缺乏模型。远志皂苷元0.5， 1 和2 μmol·L^{-1}及阳性对照组碱性成纤维细胞生长因子（bFGF）10 μg·L^{-1}。倒置显微镜下观察各组皮质神经元的形态及平均突起生长情况；免疫荧光染色法观察远志皂苷元的营养作用，检测神经元平均突起长度；另外在营养缺乏培养条件下，通过MTT法检测神经元的存活情况。**结果** 分别加入药物作用3d后，远志皂苷元0.5， 1 及2 μmol·L^{-1}均可以促进神经元突起生长，从溶媒对照组（152±46）μm分别增加至186±51，188±34及（193±43）μm，其中远志皂苷元2 μmol·L^{-1}最为显著（P<0.01），稍弱于bFGF对照组（203±40）μm。营养缺乏培养条件下细胞存活率显著下降，从正常培养条件下（100.0±5.4）%降至（90.8±4.6）% （P<0.01）。远志皂苷元0.5，1 及2 μmol·L^{-1}可明显改善营养缺乏引起的细胞死亡，细胞存活率分别为（109.7±3.2）%，（111.3±1.6）%及（112.9±4.8）%，且有一定的浓度依赖性（r=0.784， P<0.01）。**结论** 远志皂苷元可以促进神经元的存活，并可促进皮质神经元突起生长，具有神经营养作用。

关键词 远志皂苷元 皮质神经元 神经营养 突起生长

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Neurotrophic effects of senegenin on the cultures of newborn rat cortical neurons

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Abstract

OBJECTIVCE To explore the neurotrophic effects of different concentration of senegenin on cortical neurons in newborn rat. **METHODS** Primary cultured cortical neurons from 24 h newly born rat were dissociated and cultured. And the cultured cortical neurons were randomly divided into 7 groups: blank control group(2% B27+DMEM/F12)； model group(0.4%+DMEM/F12) , to detection cells survival in the trophic withdrawl culture; solvent control group(0.1% DMSO), senegenin 0.5, 1, 2 μmol·L^{-1} groups, and basic fibroblast growth factor 10 μg·L^{-1} control group. Morphology and the average growth projections of each cortical neurons group were observed by inverted microscope. An image analysis software, the Image pro plus 6.0, was adopted to collect data of average neurite outgrowth for analysis of effects of different concentration of senegenin on the neurite growth. Neurite situation were observed using immunofluorescent staining .Additionally, in the trophic with drawal cultured condition, the neurons survival was detected by MTT method. **RESULTS** After intervention for 3 d, in normal cultured condition, compared to solvent control group, senegenin 0.5, 1 and 2 μmol·L^{-1} significantly promoted neurite growth, from (152±46)μm to 186±51, 188±34 and (193±43)μm, respectively , and senegenin 2 μmol·L^{-1} showed the strongest promotion effect (P<0.01), slightly lower than bFGF control group (203±40)μm. Compared to the normal cultured condition, cell survival under the trophic withdrawal condition was decreased from (100.0±5.4)% to (90.8±4.6)%. Senegenin 0.5, 1, 2 μmol·L^{-1} can obviously improved cells death cased by the trophic withdrawal condition, and survival are (109.7±3.2)%, (111.3±1.6)% and (112.9±4.8)%, respectively. **CONCLUSION** Senegenin can promote neurons survival, and can

enhance cortical neuron neurite growth , has the neurotrophic effects.

Key words sesnegenin cortical neurons neurotrophic neurite outgrowth

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