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论文

丁基苯酞对局灶性脑缺血大鼠软脑膜微循环障碍的影响

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摘要：

目的：观察消旋、左旋及右旋丁基苯酞（*dl*-，*l*-，*d*-3-n-butylphthalide，*dl*-，*l*-，*d*-NBP）对局灶性脑缺血大鼠软脑膜微循环障碍的影响。方法：用插线法造成大鼠局灶性脑缺血模型，并用体外显微摄像技术及微循环图象处理系统观察大鼠软脑膜微动脉管径及红细胞流速的变化。结果：*dl*-,*l*-和*d*-NBP对正常大鼠脑微动脉管径无明显影响，MCAO术前1 h预防给药，*dl*-,*l*-NBP和尼莫地平可明显增加局灶性脑缺血大鼠软脑膜微动脉管径及血流速度，而*d*-NBP则加重软脑膜微循环障碍。MCAO术后20 min治疗给药，*dl*-和*l*-NBP仍可明显逆转局灶性脑缺血大鼠软脑膜微循环障碍，而*d*-NBP及尼莫地平作用不明显。结论：改善脑微循环状态是 *dl*-和*l*-NBP发挥抗脑缺血作用的重要药理机制之一。

关键词： 丁基苯酞 尼莫地平 局灶性脑缺血 软脑膜微动脉 微循环

EFFECTS OF 3-n-BUTYLPHTHALIDE ON PIAL ARTERIOLES IN FOCAL CEREBRAL ISCHEMIA RATS

Xu Haoliang and Feng Yipu

Abstract:

AIM: To study the effects of *dl*-, *l*- and d-3-n-butylphthalide(NBP) on pial arteriole diameter(AD) and blood flow velocity(BFV) in focal ischemia rats. METHODS: Urethane-anesthetized rats were instrumented for monitoring pial AD and BFV in the cranial window preparation. The effects of *dl*-, *l*-, *d*-NBP on AD and BFV were investigated in these left middle cerebral artery occluded(L-MCAO) rats by using the method of acute cranial window technique under *in vitro* videomicroscope. *dl*-,*d*-,*l*-NBP(25 mg.kg^{-1} ip) and nimodipine(0.3 mg.kg^{-1}) were administrated systemically 20 min after MCAO or 1 h before MCAO. RESULTS: In the vehicle group, MCAO induced a significant decrease in BFV and AD, the levels of BFV and AD were reduced to 18.3% and 52% compared with the preischemia baseline values. In the pretreatment groups, no change in pial AD was found after *dl*-, *l*-, *d*-NBP administration in normal animals, and a rapid and marked decrease in BFV and AD of the selected pail artery was observed within 5 minutes after MCAO. The decreased level of AD and BFV recovered quickly after MCAO in the *dl*-, *l*-NBP and nimodipine groups, while the dysfunction of microcirculation was exacerbated by d-NBP. In the post-treatment groups, dl-NBP(12.5, 25 mg.kg^{-1} ip) induced dilation of the pial arterioles and the increase in BFV was in dose-dependent manner. The pial arteriolar response to MCAO was not affected by d-NBP and nimodipine. CONCLUSION: These data suggest that the improving effects of dl- and l-NBP on microcirculation dysfunction during ischemia may play an important role in their protective effects against focal cerebral ischemia injury. *l*- and *d*-NBP showed counteractive effects on pial AD and BFV in MCAO rats indicating that NBP has stereoselective character on its protective action against cerebral ischemia injury.

Keywords: nimodipine focal cerebral ischemia pial arteriole microcirculation 3-n-butylphthalide

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