依达拉奉抑制NF-κB p65磷酸化缓解脑缺氧-复氧大鼠模型的氧自由基损伤和炎症反应

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Title: **Edaravone alleviates the oxygen free-radical damage and inflammatory response of hypoxia-reoxygenation rat by inhibiting phosphorylation of NF-κB p65**

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摘要: 目的：探讨依达拉奉对脑缺氧-复氧大鼠氧化应激损伤和炎症反应的影响。方法：大鼠随机分为3组：对照组(Ctrl)、缺氧-复氧组(H/R)和依达拉奉处理组(H/R+EV)。脱氧核糖核苷酸末端转移酶介导的缺口末端标记(terminal deoxynucleotidyl transferase-mediated dUTP nick labeling，TUNEL)染色检测细胞凋亡。ELISA检测丙二醛(malonaldehyde，MDA)，乳酸脱氢酶（lactic dehydrogenase，LDH)，超氧化物歧化酶(superoxide dismutase，SOD)，白细胞介素(interleukin，IL)-6和IL-10水平。蛋白印迹检测细胞介素受体拮抗剂(interleukin-1 receptor antagonist，IL-1Ra)，IL-1β，NF-κB p65和p-p65的蛋白水平。结果：H/R组脑梗面积大于对照组(P<0.01)。H/R+EV组脑梗面积小于H/R组(P<0.01)。H/R组脑组织细胞凋亡高于对照组(P<0.01)。H/R+EV组脑组织细胞凋亡低于H/R组(P<0.01)。与对照组相比，H/R组脑组织MDA和LDH水平上升，SOD水平降低(P<0.01)。与H/R组相比，H/R+EV组脑组织MDA和LDH水平下降，SOD水平升高(P<0.01)。与对照组相比，H/R组脑组织IL-6水平和IL-1Ra/IL-1β比值上升，IL-10水平降低(P<0.01)。与H/R组相比，H/R+EV组脑组织IL-6水平和IL-1Ra/IL-1β比值下降，IL-10水平升高(P<0.01)。H/R组脑组织p-p65/p65比值高于对照组(P<0.01)。H/R+EV组脑组织p-p65/p65比值低于H/R组(P<0.01)。结论：依达拉奉抑制NF-κB p65磷酸化缓解脑缺氧-复氧大鼠脑梗面积，细胞凋亡，氧化应激及炎症反应。

Abstract: Objective：To explore the effect of edaravone on the oxygen free-radical damage and inflammatory response in hypoxia-oxygenated rat.Methods：Rats were divided into three groups：Control (Ctrl) group，hypoxia-reoxygenation (H/R) group and hypoxia-reoxygenation+edaravone (H/R+EV) group.Apoptosis was detected by terminal deoxynucleotidyl transferase-mediated dUTP nick labeling (TUNEL).The levels of malonaldehyde (MDA)，lactic dehydrogenase (LDH)，superoxide dismutase (SOD)，interleukin (IL)-6 and IL-10 were tested by ELISA.The protein levels of interleukin-1 receptor antagonist (IL-1Ra)，IL-1β，NF-κB p65 and p-p65 were measured by Western blot.Results：The cerebral infarction area in H/R group was larger than control group (P<0.01).The cerebral infarction area in H/R+EV group was smaller than H/R group (P<0.01).Apoptosis of brain tissue in H/R group was higher than control group (P<0.01).Apoptosis of brain tissue in H/R+EV group was lower than H/R group (P<0.01).Compared with control group，the levels of MDA and LDH in H/R group were increased with declined levels of SOD (P<0.01).Compared with H/R group，the levels of MDA and LDH in H/R+EV group were decreased with enhancive levls of SOD (P<0.01).Compared with control group，the levels of IL-6 and the rate of IL-1Ra/IL-1β in H/R group were elevated with reduced levels of IL-10 (P<0.01).Compared with H/R group，the levels of IL-6 and the rate of IL-1Ra/IL-1β in H/R+EV group were attenuated with increased levls of

IL-10 (P<0.01).The rate of p-p65/p65 in H/R group was higher than control group (P<0.01).The rate of p-p65/p65 in H/R+EV group was lower than H/R group (P<0.01).Conclusion: Edaravone relieves the cerebral infarction area, apoptosis, oxidative stress and inflammatory response in hypoxia-reoxygenation rat by inhibiting phosphorylation of NF-κB p65.

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