

论著

银杏叶提取物诱导大鼠主动脉平滑肌细胞HO-1的表达及细胞信号通路研究

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摘要 目的: 旨在研究银杏叶提取物(Ginkgo Biloba Extract,EGB761)对大鼠主动脉平滑肌细胞(RVSMC)血红素氧合酶-1(HO-1)蛋白的影响,并探讨其中涉及的细胞信号通路。方法: 大鼠主动脉平滑肌细胞株复苏、传代培养到第6代,再复孔培养用于实验,分别给予空白对照、单纯EGB761、EGB761+锌原卟啉IX(ZnPPIX)或不同的细胞内信号途径特异性阻断剂进行处理,采用Western blotting法定量检测HO-1蛋白表达。结果: EGB761能呈剂量依赖性诱导HO-1蛋白表达,加用ZnPPIX(血红素氧合酶特异性阻断剂)及酪氨酸蛋白激酶(TPK)阻断剂木黄酮均能显著抑制EGB761诱导的HO-1蛋白表达(均 $P<0.01$),但calphostin-C(蛋白激酶C阻断剂)、LY294002(磷脂酰肌醇-3激酶阻断剂)及Bay11-7082(核因子- κ B阻断剂)对EGB761诱导的HO-1蛋白表达无明显影响(均 $P>0.05$)。结论: (1) EGB761能显著诱导RVSMC中HO-1蛋白的表达,并且这种诱导作用能被血红素氧合酶的特异性阻断剂ZnPPIX所阻断。(2) EGB761通过TPK途径介导大鼠主动脉平滑肌细胞HO-1蛋白的表达。

关键词 [二裂银杏](#) [血红素氧合酶-1](#) [血管平滑肌细胞](#) [信号转导](#)

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Correlative cell signaling pathway for expression of heme oxygenase-1 induced by ginkgo biloba extract in rat vascular smooth muscle cells

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Abstract

AIM: To explore the effects of heme oxygenase-1(HO-1) protein expression induced by ginkgo biloba extract (EGB761) in rat vascular smooth muscle cells (RVSMC) and the correlative cell signaling pathway.METHODS: The RVSMC lines were revived.Serial passage to 6 generation was carried out and divided into different groups.The cells were treated respectively with vehicle,purely EGB761,EGB761 plus zinc protoporphyrin IX or other specific inhibitors of cell signaling pathway.Western blotting method was used to detect the expression of HO-1 in RVSMC.RESULTS: EGB761 induced HO-1 protein expression in a dose dependent manner. ZnPPIX and genistein significantly inhibited HO-1 protein expression induced by EGB761 ($0.10\pm 0.01,0.07\pm 0.01$ vs $0.61\pm 0.07,P<0.01$,respectively).However,calphostin-C,LY294002,Bay11-7082 had no apparent effects on HO-1 protein expression induced by EGB761 ($0.63\pm 0.07,0.65\pm 0.07,0.64\pm 0.06$ vs $0.61\pm 0.07,P>0.05$,respectively).CONCLUSION: (1) EGB761 significantly induces HO-1 protein expression in RVSMC,and the effect can be inhibited by a specific HO inhibitor ZnPPIX.(2) The HO-1 protein expression induced by EGB761 in RVSMC is mediated by tyrosine protein kinase pathway.

Key words [Ginkgo biloba](#) [Heme oxygenase-1](#) [Vascular smooth muscle cells](#) [Signal transduction](#)

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