中国药理学与毒理学杂志 2009 23 (1): 34-38 ISSN: 1000-3002 CN: 11-1115/R

论著

非诺贝特和罗格列酮对高糖培养肾小球系膜细胞胞外基质产生和氧化应激的抑制作用

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收稿日期 2008-5-28 修回日期 网络版发布日期 2009-1-21 接受日期 2008-8-25

摘要 目的 探讨非诺贝特(FB)和罗格列酮(RG)对糖尿病肾病的保护机制。方法 大鼠肾小球系膜细胞分别培养于正常葡萄糖浓度（5.5 mmol·L^{-1}，正常对照）、高糖浓度（HG，25 mmol·L^{-1}）、HG+FB 100 μmol·L^{-1}和HG+RG 20 μmol·L^{-1}。比色法检测培养液中的超氧化物歧化酶（SOD）活性和谷胱甘肽（GSH）、丙二醛（MDA）含量。ELISA法检测培养上清液Ⅳ型胶原(Col-Ⅳ)及纤连蛋白(FN)含量。结果 与正常对照组比较，HG组系膜细胞上清中基质蛋白Col-Ⅳ和FN含量增多；总SOD(T-SOD)和Cu,Zn-SOD活性下降；GSH含量下降；MDA含量增加。FB或RG干预后能部分或完全逆转上述变化。与HG组比较，FB或RG干预后，上清液中Col-Ⅳ含量下降〔48 h：(21.2±3.2) *vs* (17.7±2.2)，(17.0±3.2)μg·L^{-1}〕，FN含量减少〔48 h：(13.5±1.3) *vs* (12.1±1.0)，(11.8±1.1)μg·L^{-1}〕；GSH含量增加〔36 h：(94.0±30.3) *vs* (109.8±35.6)，(111.0±28.5)g·L^{-1}〕；T-SOD活性增强〔36 h：(10.8±2.2) *vs* (13.3±2.7)，(12.8±3.3)kNU·L^{-1}〕；MDA含量下降〔36 h：(18.6±20.5) *vs* (11.8±7.0)，(11.3±7.2)μmol·L^{-1}〕。结论 FB和RG均能减少高糖培养的系膜细胞胞外基质合成，并显著缓解高糖诱导的氧化应激。

关键词 糖尿病肾病 氧化应激 非诺贝特 罗格列酮

分类号 R977.15，R963

Inhibition of fenofibrate or rosiglitazone on production of extracellular matrix and oxidative stress of glomerular mesangial cells incubated with high concentration of glucose

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Abstract

AIM To investigate the protection mechanism of fenofibrate(FB) and rosiglitazone(RG) on diabetic nephropathy. **METHODS** Rat mesangial cells(HBZY-1) were incubated in media with normal concentration glucose (5.5 mmol·L^{-1}), high concentration glucose (HG, 25 mmol·L^{-1}), HG+FB 100 μmol·L^{-1} and HG+RG 20 μmol·L-1, respectively. The activity of superoxide dismutase (SOD) and the levels of malondialdehyde (MDA), glutathione (GSH) in supernatant were assayed using chromatometry. The levels of fibronectin (FN) and type Ⅳ collagen (Col-Ⅳ) in supernatant were determined by ELISA method. **RESULTS** Compared with normal control group, HBZY-1 cells in HG group showed increased contents of Col-Ⅳ and FN; their supernatant had significantly reduced GSH level, decreased activity of total-SOD(T-SOD), Cu,Zn-SOD and elevated MDA level. These changes could be partly or fully reversed by FB or RG treatment. Compared with HG group, HG+FB or HG+RG group showed decreased contents of Col-Ⅳ〔48 h：(21.2±3.2) *vs* (17.7±2.2)，(17.0±3.2) μg·L^{-1}〕 and FN 〔48 h：(13.5±1.3) *vs* (12.1±1.0)，(11.8±1.1)μg·L^{-1}〕; their supernatant had significantly elevated GSH level 〔36 h：(94.0±30.3) *vs* (109.8±35.6)，(111.0±28.5)g·L^{-1}〕, increased activity of T-SOD 〔36 h：(10.8±2.2) *vs* (13.3±2.7)，(12.8±3.3) kU·L^{-1}〕and decreased MDA level 〔36 h：(18.6±20.5) *vs* (11.8±7.0)，(11.3±7.2)μmol·L^{-1}〕. **CONCLUSION** FB or RG can decrease synthesis of extracellular matrix in glomerular mesangial cells cultivated with high concentration of glucose, and attenuate oxidative stress obviously induced by high glucose.

Key words diabetic nephropathy oxidative stress fenofibrate rosiglitazone

DOI:

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