

论文

姜黄素对II相酶GST及NQO酶活性的诱导及其机制

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摘要:

研究姜黄素对II相酶谷胱甘肽转移酶(GST)及NADP(H)醌氧化还原酶(NQO)活性的影响及其诱导机制。用光谱法检测细胞GST酶和NQO酶的活性, 以及还原型谷胱甘肽(GSH)的含量; 利用蛋白印迹法检测核转录因子Nrf2在胞浆与胞核的分布; 采用凝胶电泳迁移率分析法(EMSA)检测Nrf2与II相酶基因抗氧化反应序列(ARE)结合活性。不同浓度的姜黄素(10~30 μmol·L<sup>-1</sup>)刺激结肠腺癌HT-29细胞后, 能显著诱导GST酶及NQO酶活性的增加, 同时能迅速提高细胞内GSH的含量; 蛋白印迹和凝胶电泳迁移率结果显示, 姜黄素诱导细胞核内转录因子Nrf2积聚, Nrf2-ARE的结合活性增加。姜黄素诱导的II相酶GST酶及NQO酶活性增加与促进转录因子Nrf2由胞浆向胞核发生转位分布和增强Nrf2-ARE结合活性有关。

关键词: 姜黄素 II相酶 Nrf2 化学预防

Effect of curcumin on the induction of glutathione S-transferases and NADP(H):quinone oxidoreductase and its possible mechanism of action

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Abstract:

This study is to investigate the effect of curcumin on the induction of glutathione S-transferases (GST) and NADP(H):quinone oxidoreductase (NQO) and explore their possible molecular mechanism. The activity of GST, NQO and cellular reduced glutathione (GSH) content were measured by spectrophotometrical methods. Cellular changes in the distribution of NF-E2 related factor 2 (Nrf2) were detected by Western blotting analysis. Nrf2-AREs (antioxidant-responsive elements) binding activity was examined by electrophoretic mobility shift assay (EMSA). Treatment of HT-29 human colon adenocarcinoma cells with curcumin dramatically induced the activity of GST and NQO at the range of 10-30 μmol·L<sup>-1</sup>. Curcumin exposure caused a significant increase in cellular GSH content rapidly as early as 3 h. Moreover, curcumin triggered the accumulation of Nrf2 in nucleus, and increased Nrf2 content in ARE complexes. These results demonstrated that induction of GST and NQO activity by curcumin may be mediated by translocation of transcription factor Nrf2 from cytoplasm to nuclear and increased binding activity of Nrf2-ARE complexes.

Keywords: phage II enzyme Nrf2 chemoprevention curcumin

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