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PDF文档

亚硒酸钠诱导SW480细胞凋亡过程中活性氧的作用

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为探讨亚硒酸钠诱导人结肠癌SW480细胞凋亡的机理.将荧光探针2′,7′-二氯荧光黄乙二脂(2′,7′-DCFH-DA)、罗丹明123(rhodamine123)负载人结肠癌细胞,利用多光子成像系统测定胞内活性氧(ROS)、线粒体跨膜电位($\Delta\Psi_m$)的变化。结果发现(1)Na_2SeO_3作用SW480细胞,可导致细胞凋亡和胞内的ROS增加,SOD、过氧化氢酶可降低凋亡率并抑制ROS的增加。(2)线粒体电子传递链抑制剂鱼藤酮及氰化钠可抑制ROS增加。(3) Na_2SeO_3可导致线粒体的跨膜电位的下降。表明Na_2SeO_3作用细胞可导致来源于线粒体的ROS增加,ROS介导亚硒酸钠诱导细胞凋亡。

EFFECT OF REACTIVE OXYGEN SPECIES ON APOPTOSIS INDUCED BY Na_2SeO_3 IN SW480 CELLS

To investigate the mechanism of apoptosis induced by sodium selenite in a human colonic cancer cell line SW480. SW480 cells were loaded with fluorescent probes 2′,7′- DCFH-DA, and rhodamine123, respectively. The changes of intracellular ROS, and mitochondrial transmembrane potential ($\Delta\Psi_m$) was detected by using multiphoton imaging system. The results showed that (1) Na_2SeO_3 elevated SW480 cells apoptotic rate and intracellular ROS; SOD, catalase evidently suppressed ROS increase and reduced apoptotic rate, (2) Inhibition of mitochondrial electron transport with NaCN or rotenone almost blocked selenite-induced ROS production,(3) Na_2SeO_3 induced disruption of the mitochondrial transmembrane potential ($\Delta\Psi$m). The data suggest that Na_2SeO_3 results in the increase intracellular ROS which origitesfrom mitochondia and mediates Na_2SeO_3-induced apoptosis.

关键词

亚硒酸纳(Sodium selenite); 活性氧(ROS); 细胞凋亡(Apoptosis); 信号转导(Signal transduction)