Ottelione A inhibited proliferation of Ehrlich ascites carcinoma cells in mice

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Abstract

While the main target of chemotherapy in cancer treatment is the induction of apoptosis and cell death, natural products provide a wealth to medicine and are considered great sources of new drugs for cancer treatment. We aimed to determine the antitumor effect of ottelione A (OTTE) on the growth and proliferation of Ehrlich ascites carcinoma cells (EACs) implanted i.p. in female mice. Animals were inoculated with EAC cells to serve as the control group. In the OTTE group, animals were implanted with EAC followed by i.p. administration of OTTE. Antitumor activity was evaluated 15 days after tumor implantation. The administration of OTTE significantly reduced ascetic volume, viability of EAC cells and increased the survival of tumor-bearing animals. Flow cytometric analysis indicated that OTTE induced G(0)/G(1), cell cycle arrest and apoptosis. These findings were associated with an alteration of redox state of EAC cells, which might impact cascade effects leading to cell cycle arrest at G(0)/G(1) phase. These effects include a decreased expression of cyclin D1, increased p53 expression and down-regulation of rRNA level, stimulation of CD8+ infiltrating T-lymphocytes. In addition, OTTE normalized oxidative stress in the liver of mice-bearing EAC cells evidenced by increased the levels of glutathione, superoxide dismutase, and catalase. In conclusion, the differential expression of p53, cyclin D1, and rRNA in EAC cells as well as the infiltration of CD8+ after OTTE treatment may play critical roles in the G(0)/G(1) cell cycle arrest that blocks cell proliferation and induce apoptosis of cancer cells. The potent antitumor property of the ottelione A can be exploited further to develop therapeutic protocols for treatment of cancer.

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Modulation of age-related biochemical changes and oxidative stress by vitamin C and glutathione supplementation in old rats

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Abstract

The present study sought to determine whether supplementation of dietary antioxidant ascorbic acid with glutathione (GSH) could ameliorate the age-related increased oxidative stress and changes in hormonal, lipid and copper (Cu) as well as zinc (Zn) levels in 18-month-old rats. The present study demonstrated that supplementation of vitamin C (30 mg) + GSH 100 mg/kg b.w. significantly reduced the concentration of thiobarbituric acid-reactive substances in liver and testes in old male rats as compared with nonsupplemented ones, indicating lower oxidative stress. In addition, testicular GSH was increased but not hepatic GSH. Also, cholesterol and triglycerides were decreased in the serum of supplemented rats. Furthermore, she serum testosterone level was increased in the same supplemented rats. However, the present results show that the thyroid hormones, T-3 and T-4, were not influenced. Lastly, the concentration of Cu in serum, liver, brain and testes was increased in supplemented old rats. Zn concentration was also increased in the same organs but not in the liver. According to the present study, the supplementation of antioxidants could play an important role in the modulation of the oxidative damage and changes associated with age. Copyright (C) 2002 S. Karger AG, Basel.

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