Anthocyanin-rich extract from Aronia meloncarpa E induces a cell cycle block in colon cancer but not normal colonic cells.

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Abstract

Anthocyanin-rich extracts, potent antioxidants and commercially available food coloring agents, have been reported to inhibit growth of various cancer cell lines. We investigated the effect of semipurified anthocyanin-rich extract from fruits of Aronia meloncarpa, on normal colon and colon cancer cell lines. A 24-h exposure to 50 mg monomeric anthocyanin/ml of Aronia extract resulted in 60% growth inhibition of human HT-29 colon cancer cells. The treated cells showed a blockage at G1/G0 and G2/M phases of the cell cycle. The cell cycle arrest coincided with an increased expression of the p21WAF1 and p27KIP1 genes and decreased expression of cyclin A and B genes. Prolonged exposure to the extract resulted in no further change in the cell number, indicating a cytostatic inhibition of cell growth. NCM460 normal colon cells demonstrated <10% growth inhibition at the highest concentration of 50 mg/ml extract. A 35% decrease in the cyclooxygenase-2 gene expression was observed within 24 h of exposure of HT-29 cells but did not translate into decreased protein levels or protein activity. These results support the need for further research to identify the specific component(s) in this extract that suppress cancer cell growth and the genes affected by these natural compounds.

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