Abstract

The cytotoxic effect of estradiol valerate, progesterone, and testosterone on brain glioblastoma, colorectal cancer and human embryonic kidney cells and the expression levels of Bax, Bcl-2, and KAI-1/CD82

Supported by: GREEN, IAS, AIC

Background

Although the anticancer effects of sex steroids have been widely reported, the results are still controversial. This study investigated the cytotoxic effects of testosterone (T), estradiol (E), and progesterone (P) on A172, HT29, and HEK293 cells and the expression levels of Bax, Bcl-2, and CD82/KAI-1 in A172 and HT29 cells.

Methods

Cell lines were divided into control groups and groups treated with 0.001, 0.01, 0.1, 1, and 10 mg/ml of T, P, and E valerate. The cytotoxic effect was measured using an MTT assay. 0.1 mg/ml of T, 0.1 mg/ml of P, and 0.1 mg/ml of E were used to evaluate the expression levels of Bax, Bcl-2, and KAI-1 genes using real-time PCR. One-way analysis of variance was used to analyze the data.

Results

Treatment with higher concentrations of T, E, and P led to decreased cell viability in Hek293 and HT29 cells. Treatment of A172 cells with higher concentrations of T, and of P led to decreased cell viability. Bax expression level increased in HT29 and A172 cells treated with T, and P. The expression level of the Bcl-2 decreased in HT29 cells treated with T, and P, and in A172 cells treated with P. Treatment of A172 cells with T, P, and E decreased KAI-1 expression level.

Conclusion

Despite estradiol, testosterone and progesterone having cytotoxic effects on colon cancer and brain glioblastoma cells through the Bax gene-dependent apoptosis pathway. Estradiol and progesterone may have anti-metastatic effects on colon cancer cells.

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