LETTER TO THE EDITOR: BRIEF COMMUNICATION

Pharmacological doses of the natural phyto-SERM DT56a (Femarelle) have no effect on MCF-7 human breast cancer cell-line

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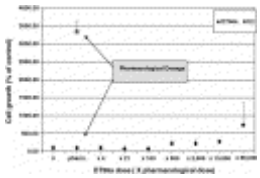
Article Outline

The association between hormone replacement therapy (HRT) and breast cancer has been debated since the introduction of this treatment. Recently, the WHI study [1] and the Million Women Study [2] confirmed the direct relation between HRT and the increase of breast cancer risk. These findings strongly emphasize the need for a safe and effective alternative treatment for the management of menopause.

In previous studies, Femarelle (DT56a, Se-cure pharmaceuticals, Dalton, Israel), a unique enzymatic isolate of the active complex in Tofu, was shown to be a phyto-SERM (selective estrogen receptor modulator); in a rat model, it had a positive effect on skeletal tissues with no effect on the uterus [3]. In a 12 month clinical study, treatment of post-menopausal women with Femarelle resulted in a significant elevation in the bone mineral density with no effect on sex steroid hormone levels or on endometrial thickness [4]. In a toxicology study on rats, there was no effect of DT56a on the reproductive organs [5].

To assess the effect of DT56a on breast tissue, we analyzed the effect of DT56a on the estradiol-dependent MCF-7 human breast cancer cell-line, in comparison to estrogen [6]. MCF-7 cells were maintained in 96 wells plates, 4000 cells per well, in an estradiol-free medium: DMEM (Dublecco's modified Eagle medium, Sigma) containing 10% FCS (fetal calf serum, Sigma). Cells were incubated for 96 h at 37 °C in a humidified atmosphere of 5% CO_2. Estradiol was added to the cultured cells at a pharmacological dose of 1 nm. The pharmacological dose of DT56a was calculated comparing to the pharmacological doses of E2 (2 mg E2, and 644 mg of DT56a). DT56a was added at incremental doses, starting at the calculated pharmacological dose of 0.3 ng/ml and up to 66,000-fold the pharmacological dose. The plate was incubated in the presence of Neutral Red dye diluted (1:100) in DCCM1 medium (Sigma) for 2 h. The cells were washed in cold $MgCl_2$ (0.1 mM) PBS suspension to extract the dye. Cells viability was measured by extent of color, developed by Elisa Reader at O.D. of 600 nm. Intensity of measured color was proportional to the number of living cells. Experiments were repeated four times with different batches.

As expected, estradiol treatment at the pharmacological dose resulted in a substantial cell growth. Unlike estradiol, DT56a treatment at pharmacological doses did not produce any measurable proliferation. The dose response curve (Fig. 1) showed a minor growth only at mega-doses of 66,000 times the pharmacological dose (6.6×10^4) of DT56a, which was significantly lower than that observed in the estradiol-treated cells.



Full-size image (35K)

Fig. 1. Estradiol treatment at the pharmacological dose resulted in a substantial cell growth. DT56a treatment at pharmacological doses did not produce cell proliferation. A minimal growth was found only at 66,000 times the pharmacological dose of DT56a.

In conclusion, pharmacological doses of DT56a as well as incremental doses, did not trigger cell growth in the MCF-7 cell line. Whether DT56a has antiestrogenic properties in the breast tissue, is currently under investigation.

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