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7th World Congress on

Breast Cancer November 01-02, 2017 | Toronto, Canada

The Soy – Breast Cancer Question

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Breast cancer remains a serious world-wide problem. It continues to be the leading form of cancer in women both in North America and in developing countries. More than 200,000 women are diagnosed with breast cancer each year in the U.S. alone. The mainstays of treatment continue to be surgery, radiation, chemo- and endocrine therapies, although the anti-cancer potencies of several natural agents have entered clinical trials, including herbal supplements, vitamins, sponge and coral derivatives, and a range of dietary products. Notably, many are used by women with a recent diagnosis of breast cancer without their physician's knowledge. Although none has proven curative, dietary agents are seen by many as safe, low-risk alternatives to the more potent chemotherapeutic drugs currently used against breast cancer. One example is genistein, a soy-derived phytoestrogen which is known to have cytoprotective as well as cytotoxic effects on breast cancer cells. It is estimated that over one million women consume phytoestrogens worldwide even though questions regarding their effects on breast cancer risk, progression, and/or treatment responses are largely unsettled. In our studies three different human breast cancer cell sublines were established using long-term, low-dose exposure protocols. This was accomplished by passing a single parental cell line in media supplemented with genistein, estradiol, or tamoxifen as well as unsupplemented media used for controls, followed by maintenance in parallel for a period of two years. The resulting sublines were characterized for changes in DNA- and ligand-binding; target gene activation; estrogen receptor expression, cell morphology, growth and survival; as well as ploidy; cell cycle distribution, and responses to treatment with the anti-cancer agent paclitaxel.

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