Genistein:
An Isoflavone that Kills Cancer

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Introduction

Soy has been promoted for many years as a super health food. It is well known that countries with the highest consumption of soy have the lowest rates of cancer. Two components which are in great quantity in soy are Genistein and Daidzein, both of which are showing promise in cancer research.

Genistein is a plant produced isoflavone (5,7,4'-trihydroxyflavone), which becomes a phytoestrogen in mammals. It is a weak estrogen (about 1/500th the amount of normal human estrogen[13]). For this reason it is known as an antiestrogen in animal models[7] by attaching itself to the estrogen (oestrogen) receptors of cells, it can be used to interfere with estrogen receptive cancers, such as breast cancer and ovarian cancer.

Genistein has been studied extensively and shown in Vitro(cell culture) and in Vivo (animal studies) to be cytoxic (anti-neoplastic) to a wide variety of cancer cells and chemo sensitising to human cancer cells in combination with orthodox treatment.[1]

What does Genistein do to Cancer Cells?

Researchers have found the following in relation to cancer cells and Genistein:

- Causes Apoptosis (programmed cell death) and Autophagocytosis (cellular degradation[11]) of cancer cells. Most current chemotherapeutic agents only induce apopotic cell death.
- Is anti-neoplastic to cancer cells including: Non Hodgkin's Lymphoma, Melanoma, Lung, Ovarian, Breast, Colon, Prostate and Thyroid Cancers as well as Head and Neck Squamous Cell Cancer, Gastric, Cervical and Pancreatic Cancers. [1 5 14]
- Genistein Interacts with tNOX (tNOX 75 Alpha to be specific) to help prevent cancer growth. tNOX appears on the surface of cancer cells (normal cells only have 'NOX') and is believed to promote aggressive cell multiplication (tumour growth development). For example, green tea is yet another natural source that interacts with tNOX and is possibly one reason why it helps combat cancer.
- Dramatically inhibits glucose uptake in cancer cells.[15]It is well known that glucose (sugar) is consumed by cancer cells more than normal cells[5].
- Inhibits Tyrosine kinase pathways, via EGF (Epidermal Growth Factor) receptor inhibition. EGF is responsible for activation of pro survival (anti apoptosic) pathways in the cancer cell. These pathways stimulate glucose metabolism (glycolysis) to procure more energy and stimulate new blood growth (angiogenesis) and metastasis (spreading of the cancer)[15].

Inhibiting the tyrosine pathways contributes to increasing apoptosis by reducing all energy and production of angiogenesis factors along with reducing cancer spread (metastasis).

- Is not toxic to normal cells[6].
- Potentially interferes with the CXCR4/CXCL12 axis which is known to assist with the metastasis of cancer and the development of cancer. When combined with DIM (diindolylmethane) or Indol-3-Carbinol, the CXCR4 and CXCL12 are reduced to that of normal cells[8]. CXCR4 has been shown to be active in the ovarian cancer cell line OC 314 which assists Epidermal Growth Factor (EGF) Receptor Activation[10].
- When combined with Indol-3-Carbinol and or DIM (in vitro), effectively halts ovarian cancer cells. When used alone, significantly slows them[8].
- Increases apoptotic cell death in combination with radiotherapy[17].
- In Vitro (cell culture) increases the effect of chemotherapy drugs, Docetaxol gemcitabine and cysplatin by inhibiting a pro growth factor of NF Kappa B which is stimulated by the listed chemotherapy drugs[18].
- Has been shown to significantly inhibit PSA secretion in prostate cancer cells in vitro.
- Is a powerful antioxidant, it protects against Reactive Oxygen Species (ROS) production. ROS's stimulate mitosis (cell division) and angiogenesis (new blood vessel production).

Conclusion

While there is sufficient research on the power of Genistein and cancer, there is unlikely to be any clinical trials with any supplements versions of Genistein because of the immense cost to produce a clinical trial. Therefore one can only base the available in vitro research along with any in vivo research that comes across. If you wish to use supplementation of Genistein with your current treatment of cancer, it is recommended you talk about this with your oncologist (be sure to bring citations and references to assist you if you are not aware of this research) about the possible advantages and disadvantages of using Genistein and the current chemotherapy drug(s).

At Resort to Health we use both oral and intravenous treatments with most cancer protocols. It is used in combination with other herbal treatments such as green tea and selenium. Genistein is a proven cancer fighter. Because it fights cancer with no great toxicity to normal cells it can be used for extended periods in combination with other treatments without major side effects.

For more information on our treatments please visit http://resorttohealth.com.au

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