

Insulin Potentiation Therapy

Information from Steven Ayre's website: <http://www.contemporarymedicine.net/>

Chemotherapy drugs are powerful cell-killing agents. In current medical practice, getting these drugs into the inside of cells where they do their work requires that they be administered in doses high enough to force them across the membranes of cancer cells.

A major drawback to this dosing strategy is a serious dose-related side effect profile frequently seen with anticancer drugs. This happens because chemotherapy agents do not discriminate between cancer cells and other normal cells in the patient's body. They kill both kinds of cells, therefore there are side effects.

With recent advances in our understanding of the inner workings of cancer cells, it is now possible to avoid the dose-related side effects of chemotherapy, while at the same time increasing the effectiveness and specificity of these agents in killing cancer cells. The key to this is an innovative strategy for drug delivery called **Insulin Potentiation Therapy (IPT)**.

Readers will recognize insulin as being the hormone used to treat diabetes. Secreted by the pancreas in healthy people, insulin is a powerful hormone with many actions in the human body, a principal one being to manage the delivery of glucose across cell membranes into cells. Insulin communicates its messages to cells by joining up with specific insulin receptors scattered on the outer surface of the cell membranes. Every cell in the human body has some of these receptors, with there being from one hundred to one hundred thousand of them per cell.

One might well ask, "What does any of this have to do with cancer cells?" It is a well-known scientific fact that cancer cells have a voracious appetite for glucose. Glucose is their unique source of energy, and because of the relatively inefficient way cancer cells burn this fuel, they use up a great deal of it. This is one reason why cancer patients lose so much weight. Because cancer cells require so much glucose, they virtually steal it away from the body's normal cells, thus starving them.

The interesting connection between cancer cells and insulin is that recent findings published in the scientific medical literature report that **cancer cells actually manufacture and secrete their own insulin**. That cancer cells should be able to do this makes good sense, knowing of their requirements for large amounts of glucose to fuel their processes of uncontrolled growth. Related to this insulin secretion, and central to the operation of Insulin Potentiation Therapy, is the even more interesting fact that cancer cells have **ten times more insulin receptors** per cell than any of the normal cells in the body. This fact creates a valuable opportunity for the chemotherapy of cancer because it significantly differentiates normal cells from the cancerous ones.

Having ten times more insulin receptors than normal cells means that the effect of administered insulin will be ten times greater on cancer cells than on normal cells. With this difference, combined with actions of insulin in Insulin Potentiation Therapy, we are able to deliver an effective dose intensity of chemotherapy drugs to the inside of cancer cells - selectively, with a sparing of normal tissues - and this can be accomplished using greatly reduced doses of the drugs, effectively eliminating all their dose-related side effects.

There is a kind of poetic justice in this wonderful coincidence of cancer cell biology. The mechanisms that cancer cells use to kill people are the same ones manipulated in IPT to selectively potentiate chemotherapy effects in them, and to more safely and effectively kill the cancer cells. A published article about cancer cells in tissue culture reported that the addition of insulin to the culture medium enhanced the cell-killing effect of methotrexate - a commonly used

chemotherapy drug - by a factor of up to **ten thousand**. This striking result was attributed to two effects on the cancer cells.

One was an effect of insulin to increase the trans-membrane transport of the methotrexate into the cell. The other was what the authors called "metabolic modification by insulin" within the cancer cells. There is yet another wonderful and powerful coincidence of cancer cell biology involved in this factor of "metabolic modification" - one that fits right in with the workings of Insulin Potentiation Therapy.

Just as cancer cells have their own independent secretion of insulin for unlimited access to the fuel they require, they also have their own independent secretion of something called insulin-like growth-factor to provide them with an unlimited stimulus for growth. Cancer cells also have **ten times more of the receptors for insulin-like growth-factor** on their cell membranes - just as for the insulin receptors.

The metabolic modification by insulin mentioned above results from the fact that not only can it join up with its own specific receptors on cell membranes, but **insulin is also able to join up with the receptors for insulin-like growth-factor**, and to communicate messages about growth to these cells. While it may seem highly undesirable for a cancer therapy to actually promote cancer cell growth, this is in fact a valuable effect of insulin here.

Chemotherapy side-effects result from actions on the cells of patient's hair follicles, their bone marrow, and the cells lining the stomach and intestines. This is what causes the hair loss, low blood cell counts, and the nausea and vomiting. What these different cell types all have in common - along with cancer cells - is that they are all **rapidly dividing cells**.

Chemotherapy drugs like to attack rapidly dividing cells, indiscriminately. In a tumor, not all the cancer cells are in this rapidly dividing stage all at once. They take turns. When insulin joined up with the excess of insulin-like growth-factor receptors on those cancer cells in the tissue culture, it stimulated growth in many of the cells that were not in this growth phase. **This "metabolic modification by insulin" rendered more of these cells susceptible to chemotherapy attack, contributing to their increased death rate as observed in the experiment.**

In Insulin Potentiation Therapy, insulin administration does cause the blood glucose to go down. This is called hypoglycemia. This hypoglycemia is an anticipated side-effect of the insulin, one rapidly and effectively controllable with intravenous glucose infusions at an appropriate time, according to the IPT protocol. The principal role insulin plays in IPT is that of **a biologic response modifier**. It modifies the biologic response of cancer cells in such a way that lowered doses of anticancer drugs, administered in conjunction with insulin, will kill the cancer cells more effectively. Insulin **modifies the cell membrane** allowing more anticancer drugs into the cell. It also **modifies the growth characteristics** in tumors making more of the cancer cells vulnerable to anticancer drug effects.

Due to the great excess of insulin-sensitive receptors on cancer cell membranes, we are now able to create a clear differentiation between cancer and normal cells using insulin.

Because of this important element of differentiation, along with the biologic response modification insulin produces, conventional chemotherapy drugs get targeted more specifically and more effectively inside the cancer cells only, and this can occur with the use of greatly reduced doses of these cell-killing drugs. Cancer cells die, tumors shrink, and no side-effects are caused in any other tissues. Insulin Potentiation Therapy appears to be a wonderful new way of treating cancer using nothing other than conventional chemotherapy drugs.

For more information, go to <http://www.contemporarymedicine.net/IPT%20-%20The%20Rx%20at%20a%20Glance.htm>. For a list of doctors that use IPT, go to <http://www.iptq.com>. One pioneer of this therapy is [Dr. Garcia](#) - He has a clinic in Mexico.

There is a good book published in 2002 that discusses IPT - *Cancer - Treating Cancer with Insulin Potentiation Therapy* by Ross A. Hauser, MD and Marion A. Hauser, M.S., R.D. at Caring Medical in Illinois. Dr. Hauser trained with Dr. Ayres.

INSULIN POTENTIATION THERAPY (IPT)

IPT targets the powerful cell-killing effects of standard chemotherapy on cancer cells, and negates their destructive side effects on healthy tissues.

Insulin Potentiation Therapy (IPT) is a new approach to treating cancer that involves no new drug products. The therapy uses insulin, and takes advantage of the powerful, cell-killing effects of ordinary chemotherapy drugs, used in very low doses. Cancer cells get their energy by secreting their own insulin, and they stimulate themselves to grow by secreting their own insulin-like growth factor (IGF). These are their mechanisms of malignancy. Insulin and IGF work by attaching to special cell membrane receptors, and these receptors are sixteen times more concentrated on cancer cell membranes than on normal cells. These receptors are the key to IPT. Using insulin in IPT, the end result is that the low dose chemotherapy gets channeled specifically inside the cancer cells, killing them more effectively, and with no chemotherapy side-effects. IPT is ingenious; it kills cancer cells by using the very same mechanisms that cancer cells use to kill people.

Insulin Potentiation Therapy was developed in Mexico by a family of physicians there - the Drs. Donato Perez Garcia (see the History of IPT). Over the last twenty-five years (see Chronology of Events in the Scientific Evaluation of IPT), Dr. Ayre has collaborated with his Mexican colleagues by providing a sound scientific basis for the therapy, and getting documentation of this published in the scientific medical literature. Their common goal has always been, and yet remains, to get IPT properly studied in this country so greater numbers of physicians and patients in the United States could use it.

IPT is a powerful drug delivery system that uses ordinary chemotherapy drugs in greatly reduced doses, and makes these work without any of the common side-effects associated with conventional chemotherapy treatment. The results of this cancer treatment have been astounding in many cases. (See [Case Reports](#)). The pre-surgical treatment of cases of breast cancer with IPT has produced results that allowed surgery to be avoided altogether in the women treated, again without drug-related side-effects. So promising have been their results that Dr. Ayre and his Mexican colleagues have been invited to present their cases before the Cancer Advisory Panel of the Center for Cancer Complementary and Alternative Medicine at the National Institutes of Health in Bethesda, Maryland. This presentation is scheduled for the month of September, 2000. Hopefully, the results of this presentation will mark "the end of the beginning" to their years-long quest to see IPT scientifically evaluated.

Dr. Ayre is currently practicing IPT here in Chicagoland at his Burr Ridge Clinic. Copies of the text of two Patient Education Brochures entitled "Insulin Potentiation Therapy - IPT" and "Managing Malignancy: Our Answer to Cancer" are included on this website. Two final entries in this presentation of IPT are "Insulin Potentiation Therapy: A Renaissance in Cancer Chemotherapy" and "Hoist by One's Own Petard - The design and the demise of cancer." The first of these is an attempt to make the mechanics of the therapy understandable to lay people. The second is a composition written for publication in the Townsend Letter for Doctors and Patients (Oct. 1999). This is not meant to be a scientific article. It is a humorous rendering of the history and some of the frustration associated with the twenty-five years of research activity on IPT in this country.