Spontaneous Regression of Breast Cancer After Iodine

In his Iodine book, David Brownstein MD reports three cases of spontaneous regression of breast cancer after iodine supplementation. (1) (page 63)

**Case One**

The first patient, Joan a 63 year old English teacher, was diagnosed with breast cancer in 1989, declined conventional treatment, and took 50 mg per day of Iodoral, (Iodine). Six weeks later, a PET scan (left image) showed, "all of the existing tumors were disintegrating".

Above Left Image: Pet scan showing breast cancer (red arrows) Courtesy of Wikimedia Commons.

**Case Two**

The second patient, 73 year old Delores, was diagnosed with breast cancer in 2003. She declined conventional treatment with radiation and chemotherapy. Instead, Dolores took 50 mg of Iodoral daily. A follow up ultrasound of the breast 18 months later showed," It appears that these malignancies have diminished in size since the last examination. Interval improvement is
definitely seen,” Two years later a follow up mammogram and ultrasound failed to show any abnormality and were read by the radiologist as normal.

Case Three

The third patient, 52 year old Joyce was diagnosed with breast cancer two years prior (left image), and started on Iodoral 50 mg per day. Three years after starting Iodoral, her follow up mammograms and ultrasound exams show decreasing size of the tumor with no progression.(1)

Iodine Deficiency Causes Breast Cancer - The Overwhelming Evidence

Human Studies of Areas with Low Iodine

Iodine deficiency is associated with a higher rate of goiter and breast cancer. Similarly, higher dietary Iodine intake is associated with less goiter and breast cancer. For example, Japan has the highest dietary intake of iodine (13 mg per day), and the lowest rates for goiter and breast cancer. However, when Japanese women immigrate and change dietary intake of Iodine to the lower 150 mcg/day in America, breast cancer rates increase. (1)

Iceland is another country with high Iodine intake and low rates for goiter and breast cancer. The high dietary iodine came from the fishing industry before WWI. In those days, the fish meal was fed to dairy cows providing milk with high iodine content. After WWI, the fish meal was eliminated from the dairy cows, and breast cancer rates soared ten-fold. (2)

Animal studies

Iodine deficient diets in animals induces breast cancer and goiter.(1)

Iodine Research from Mexico, India and Japan.

India

The Shrivastava group in India reported molecular iodine induces apoptosis (programmed cell death) in human breast cancer cell cultures. "Iodine showed cytotoxic effects in the cultured human breast cancer cells". (3)

Mexico

From Mexico, the Carmen Aceves Velasco Group reported Iodine to be safe, with no harmful effects on thyroid function, and an anti-proliferative effect on human breast cancer cell cultures. (5)(6)(7) Their 2009 paper reported the mechanism by which Iodine works as an anti-cancer agent. Iodine binds to
membrane lipids called lactones forming iodo-lactones which regulate apoptosis (programmed cell death). Iodine causes apoptosis which makes cancer cells undergo programmed cell death.(4) Dr. Aceves concluded that continuous molecular iodine treatment has a "potent antineoplastic effect" on the progression of mammary cancer. (10)

Japan

From Japan, Dr Funahashi reported a common seaweed food containing high iodine content is more beneficial than chemotherapy on breast cancer. "He found that administration of Lugol's iodine or iodine-rich Wakame seaweed to rats treated with the carcinogen dimethyl benzanthracene suppressed the development of mammary tumors. The same group demonstrated that seaweed induced apoptosis in human breast cancer cells with greater potency than that of fluorouracil, a chemotherapeutic agent used to treat breast cancer."(8)

Mechanism of Action-Altering Gene Expression

A 2008 paper by Bernard A. Eskin MD showed that Iodine actually altered gene expression in breast cancer cells, inducing programmed cell death. (9)

Lung Cancer and Iodine

A 2003 study by Ling Zhang showed that molecular Iodine caused lung cancer cells to undergo programmed cell death (apoptosis). These lung cancer cells had been genetically modified to increase iodine uptake.(12) Interestingly, a 1993 case report describes spontaneous remission of lung
cancer in a patient incidentally treated with Amiodorone which contains iodine (about 9 mg per day)(13)

In Conclusion

Current Iodine research calls for use of molecular Iodine for all patients with breast cancer. (10)(11) Other cancers such as lung and prostate may also benefit. Further research on Iodine as cancer chemotherapy should receive top priority for NIH funding.

**Which Form of Iodine to Use?**

Iodine in the form of Iodoral tablets is available

Buy

Iodoral on Amazon.

**Articles with Related Content:**

Iodine Prevents Breast Cancer Part One

**Links and References**


(2) Breast Cancer and Iodine by David M Derry MD PhD 2001 Trafford.

Human Breast Cancer - India 2006 full text

(3) http://www.jbc.org/content/281/28/19762.abstract

July 14, 2006 The Journal of Biological Chemistry, 281, 19762-19771

Molecular Iodine Induces Caspase-independent Apoptosis in Human Breast Carcinoma Cells Involving the Mitochondria-mediated Pathway. Ashutosh Shrivastava et al. National Laboratory Animal Cell Culture and Electron Microscopy Unit, Central Drug Research Institute, Lucknow 226 014, India

The iodine-induced apoptotic mechanism was studied in MCF-7 cells. DNA fragmentation analysis confirmed internucleosomal DNA degradation. Terminal deoxynucleotidyl transferase-mediated dUTP nick-end labeling established that iodine induced apoptosis in a time- and dose-dependent manner in MCF-7 cells.

We propose a detailed mechanism of the molecular iodine (I2)-induced apoptosis in human breast cancer cells that may explain iodine-induced breast cancer regression in experimental rat models as well as beneficial effects
observed in human fibrocystic breast subjects (3-6). Iodine showed cytotoxic effects in the cultured human breast cancer cells

C Aceves, Arroyo-Helguera

(4) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2703618/
Antineoplastic effect of iodine in mammary cancer: participation of 6-iodolactone (6-IL) and peroxisome proliferator-activated receptors (PPAR). Carmen Aceves et al. México

This report confirms our previous observations that I2 treatment reduces mammary cancer incidence [7], decreases the proliferative rate (PCNA), and induces apoptosis (TUNEL and caspases) in cancerous mammary cells in vitro [14,15] or in vivo without any secondary adverse effect on the thyroid or general health.

Our previous observation that tumor growth resumes if I2 treatment is suspended. [7].

In conclusion, these data support our notion that I2 supplement could be an adjuvant in the therapy of mammary cancer, where the high concentration of AA characteristic of tumoral cells serves as substrate to form 6-IL, which in turn triggers the activation of apoptotic and anti-invasive pathways by modulating PPAR receptors.

Safety of Molecular Iodine


Several studies have demonstrated that moderately high concentrations of molecular iodine (I2) diminish the symptoms of mammary fibrosis in women, reduce the occurrence of mammary cancer induced chemically in rats (50–70%), and have a clear antiproliferative and apoptotic effect in the human tumoral mammary cell line MCF-7.

Nevertheless, the importance of these effects has been underestimated, in part because of the notion that exposure to excess iodine represents a potential risk to thyroid physiology. In the present work we demonstrate that uptake and metabolism of iodine differ in an organ-specific manner and also depend on the chemical form of the iodine ingested (potassium iodide vs. I2). Further, we show that a moderately high I2 supplement (0.05%) causes some of the characteristics of the “acute Wolff-Chaikoff effect”; namely, it lowers expression of the sodium=iodide symporter, pendrin, thyroperoxidase (TPO), and deiodinase type 1 in thyroid gland without diminishing circulating levels of thyroid hormone.

Finally, we confirm that I2 metabolism is independent of TPO, and we demonstrate that, at the doses used here, which are potentially useful to treat
mammary tumors, chronic I2 supplement is not accompanied by any harmful secondary effects on the thyroid or general physiology. Thus, we suggest that I2 could be considered for use in clinical trials of breast cancer therapies.

I2 increases expression of NIS, PEN, and lactoperoxidase (LPO) in tumoral mammary tissue without any alteration in thyroid physiology. These data indicate that the uptake and metabolism of iodine are organ-specific and differ depending on the chemical form in which it is ingested, and they provide additional evidence that a chronic, moderately high I2 supplement causes no harmful secondary effects on health (e.g., body weight, thyroid economy, or reproductive cycle). Thus, we propose that I2 supplementation should be considered for use in clinical trials of breast cancer therapies.

Breast Cancer Cell Line and Iodine

(6) http://erc.endocrinology-journals.org/cgi/content/full/13/4/1147
Uptake and antiproliferative effect of molecular iodine in the MCF-7 breast cancer cell line. C Aceves et al. Querétaro, México.

In conclusion, these results demonstrate that I2 uptake does not depend on NIS or PDS; they suggest that in mammary cancer cells, I2 is taken up by a facilitated diffusion system and then covalently bound to lipids or proteins that, in turn, inhibit proliferation.

(7) http://erc.endocrinology-journals.org/cgi/content/abstract/15/4/1003

Previous reports have documented the antiproliferative properties of I2 and the arachidonic acid (AA) derivative 6-iodolactone (6-IL) in both thyroid and mammary glands. In this study, we characterized the cellular pathways activated by these molecules and their effects on cell cycle arrest and apoptosis in normal (MCF-12F) and cancerous (MCF-7) breast cells.

Low-to-moderate concentrations of I2 (10–20 µM) cause G1 and G2/M phase arrest in MCF-12F and caspase-dependent apoptosis in MCF-7 cells. In normal cells, only high doses of I2 (40 µM) induced apoptosis, and this effect was mediated by poly (ADP-ribose) polymerase-1 (PARP1) and the apoptosis-induced factor, suggesting an oxidative influence of iodine at high concentrations. Our data indicate that both I2 and 6-IL trigger the same intracellular pathways and suggest that the antineoplastic effect of I2 in mammary cancer involves the intracellular formation of 6-IL. Mammary cancer cells are known to contain high concentrations of AA, which might explain why I2 exerts apoptotic effects at lower concentrations only in tumoral cells.

Seaweed Japan

To investigate the chemopreventive effects of seaweed on breast cancer, we have been studying the relationship between iodine and breast cancer. We found earlier that the seaweed, wakame, showed a suppressive effect on the proliferation of DMBA (dimethylbenz(a)anthracene)-induced rat mammary tumors, possibly via apoptosis induction. In the present study, powdered mekabu was placed in distilled water, and left to stand for 24 h at 4°C. The filtered supernatant was used as mekabu solution. It showed an extremely strong suppressive effect on rat mammary carcinogenesis when used in daily drinking water, without toxicity. In vitro, mekabu solution strongly induced apoptosis in 3 kinds of human breast cancer cells. These effects were stronger than those of a chemotherapeutic agent widely used to treat human breast cancer. Furthermore, no apoptosis induction was observed in normal human mammary cells. In Japan, mekabu is widely consumed as a safe, inexpensive food. Our results suggest that mekabu has potential for chemoprevention of human breast cancer.

Iodine Alters Gene Expression in Breast Cancer Cells.

(9) http://www.medsci.org/v05p0189

The protective effects of iodine on breast cancer have been postulated from epidemiologic evidence and described in animal models. The molecular mechanisms responsible have not been identified but laboratory evidence suggests that iodine may inhibit cancer promotion through modulation of the estrogen pathway.

To elucidate the role of iodine in breast cancer, the effect of Lugol's iodine solution (5% I2, 10% KI) on gene expression was analyzed in the estrogen responsive MCF-7 breast cancer cell line. Microarray analysis identified 29 genes that were up-regulated and 14 genes that were down-regulated in response to iodine/iodide treatment. The altered genes included several involved in hormone metabolism as well as genes involved in the regulation of cell cycle progression, growth and differentiation.

Molecular Iodine to Treat Breast Cancer

(10)http://findarticles.com/p/articles/mi_pwwi/is_200610/ai_n16809836/
Research Calls for Use of Molecular Iodine to Treat Breast Cancer. Market Wire, October, 2006

Lung Cancer and Iodine

(12) [http://cancerres.aacrjournals.org/cgi/content/full/63/16/5065](http://cancerres.aacrjournals.org/cgi/content/full/63/16/5065)

Cancer research 2003;63(16):5065-72.

Nonradioactive Iodide Effectively Induces Apoptosis in Genetically Modified Lung Cancer Cells
Ling Zhang, Sherven Sharma, Li X. Zhu, Takahiko Kogai, Jerome M. Hershman, Gregory A. Brent, Steven M. Dubinett and Min Huang
Division of Pulmonary and Critical Care Medicine, University of California Los Angeles

We assessed a nonradioactive approach to induce apoptosis in non-small cell lung cancer by a novel iodide uptake and retention mechanism. To enhance tumor apoptosis, we transduced non-small cell lung cancer cells with retroviral vectors containing the sodium iodide symporter (NIS) and thyroperoxidase (TPO) genes. Expression of NIS and TPO facilitated concentration of iodide in tumors. As a consequence of the marked increase in intracellular levels of iodide, apoptosis was seen in >95% of NIS/TPO-modified lung cancer cells. Intraperitoneal injection of potassium iodide resulted in significant tumor volume reduction in NIS/TPO-modified tumor xenografts without apparent adverse effects in SCID mice. Iodide induced an increase in the level of reactive oxygen species. Iodide-induced apoptosis is sensitive to N-acetylcysteine inhibition, suggesting an important role by reactive oxygen species in this apoptotic process. In addition, iodide-induced apoptosis is associated with overexpression of CDKN1A (p21/Waf1) and down-regulation of survivin at both mRNA and protein levels. This is the first report demonstrating that a therapeutic dose of nonradioactive iodide has potent efficacy and high selectivity against lung cancer when used in combination with genetic modification of cancer cells to express the NIS/TPO genes.

Spontaneous Remission of Lung Cancer With Iodine Treatment

(13) [http://jnci.oxfordjournals.org/cgi/pdf_extract/85/16/1342](http://jnci.oxfordjournals.org/cgi/pdf_extract/85/16/1342)

Spontaneous remission of metastatic lung cancer following myxedema coma--an apoptosis-related phenomenon? Hercbergs A, Leith JT. Patient was incidently treated with Amiodorone which contains iodine 9 mg day

2000 Nature America Inc. The mammary gland iodide transporter is expressed during lactation and in breast cancer. UYGAR H. TAZEBAY et al.

Sebastiano Venturi


15) [http://web.tiscali.it/iodio/](http://web.tiscali.it/iodio/)

Dr. Sebastiano Venturi investigator on Iodine Deficiency Disorders and Iodine metabolism
Iodine for breast pain

The Effect of Supraphysiologic Levels of Iodine on Patients with Cyclic Mastalgia
Jack H. Kessler, PhD Symbollon Pharmaceuticals, Inc., Framingham, Massachusetts

Patients recorded statistically significant decreases in pain by month 3 in the 3.0 and 6.0 mg/day treatment groups, but not the 1.5 mg/day or placebo group; more than 50% of the 6.0 mg/day treatment group recorded. A clinically significant reduction in overall pain. All doses were associated with an acceptable safety profile. No dose-related increase in any adverse event was observed.

Peter PA Smyth

Commentary The thyroid, iodine and breast cancer by Peter PA Smyth
Endocrine laboratory, Department of Medicine and Therapeutics, and Conway Institute of Biomolecular and Biomedical Research, University College Dublin, Ireland Published: 29 July 2003 Breast Cancer Res 2003, 5:235-238

Previous studies [2,3] that showed both increased goiter rates and increased prevalence of thyroid enlargement by ultrasound in patients with breast cancer [4].

It has been postulated that formation of iodolipids such as iodolactones or iodoaldehydes represents a form of thyroidal autoregulation [26], which may be the mode of action of iodide inhibition of thyroid function in the Wolff–Chaikoff effect [27-29]. In addition to their role in inhibiting thyroid function, these compounds may act as antiproliferative agents in the thyroid [26].

An anticarcinogenic role for iodine in experimental animals was suggested by the work of Funahashi and coworkers [33], who found that administration of Lugol’s iodine or iodine-rich Wakame seaweed to rats treated with the carcinogen dimethyl benzanthracene suppressed the development of mammary tumours. In further studies [34], the same group demonstrated that seaweed induced apoptosis in human breast cancer cells with greater potency than that of fluorouracil, a chemotherapeutic agent used to treat breast cancer. This finding led the authors to speculate that ‘seaweed may be applicable for prevention of breast cancer’. This hypothesis is in accord with the relatively low breast cancer rate reported in Japan [35], where the normal diet is seaweed rich, and with increasing breast cancer rates in Japanese women who emigrate [36] or consume a western style diet [37]. The frequent coexistence of iodine and
selenium deficiencies and the importance of replacing both to maintain thyroid function is well established

Iodine Resolves Fibrocytic Breast Disease - Ghent and Eskin 1993

   Ghent WR, Eskin BA, Low DA, Hill LP. Department of Surgery, Queen's University, Hotel Dieu Hospital, Kingston, Ont.
   OBJECTIVE: To determine the response of patients with fibrocystic breast disease to iodine replacement therapy. CONCLUSIONS: Molecular iodine is nonthyrotropic and was the most beneficial.

Iodine Project

   Guy Abraham Iodine Project Optimox

21) http://cypress.he.net/~bigmacnc/drflechas/index.htm
   George Flechas MD

22) https://www.drbrownstein.com/bookstore_Iodine.php
   David Brownstein MD Iodine Book

23) http://www.ei-resource.org/expert-columns/dr.-jacob-teitelbaums-column/iodine-deficiency-%11-an-old-epidemic-is-back/
   Jacob Teitelbaum MD on Iodine

   Extrathyroidal Benefits of Iodine by Donald W. Miller, Jr., M.D.

Iodine Links

Breast Cancer Choices.org
http://www.breastcancerchoices.org/iodineref2.html
Investigating the Relationship Between Iodine and the Breast
PART 2: WHAT ARE IODINE'S MECHANISMS OF ACTION? OBSERVATIONS AND THEORIES
Iodine Treatment Found to Have an Effect on the Expression of Breast Cancer Genes
http://www.breastcancerchoices.org/iodineref3.html
PART 3: WHAT IS THE EFFECT OF IODINE ON BREAST CANCER?

www.breastcancerchoices.org
http://www.breastcancerchoices.org/iodine.html
Research suggests that some breast cancers may be an iodine deficiency
Results: A 58-fold increase in iodide uptake was observed in infected MUC1-positive T47D cells with no significant increase observed in MUC1-negative MDA-MB-231 cells or in cells infected with the control virus. The in vivo study yielded clear images of Ad/MUC1/NIS-infected tumor xenografts using 123I. Administration of a therapeutic dose of 131I resulted in an 83% reduction in tumor volume, whereas control tumors continued to increase in size (P < 0.01).