



CANCER OPTIONS

CANCER OPTIONS NEWSLETTER

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WELCOME TO THE MONTHLY NEWSLETTER FROM THE CANCER OPTIONS RESEARCH TEAM.

As you may know (if you don't there is more information about us at the end of the newsletter) we take an impartial and receptive view of good quality information on all approaches to cancer.

Our newsletter contains the pick of the best information from both the orthodox and complementary worlds of cancer. There are frequently contentious issues particularly relating to Cam therapies, where possible we will bring you the balancing arguments so you can make your own mind up.

We are strong believers in people with cancer being able to access on the benefits of safe integration of different approaches. We don't believe that people who wish to take charge of their dealing with cancer and tackle it from a holistic and multi-dimensional approach are either naive or unable to rationalise the arguments from viewpoints that are diametrically opposed for many reasons.

We aim for people to be:

PROACTIVE! WELL INFORMED! DETERMINED! DECISIVE!

We always say at Cancer Options; we don't mind what you do as long as you are well informed and have made your own decisions.

When we are working with people through the vast amounts of confusing and contradictory evidence our three golden rules for surviving cancer:

❖ **KEEP YOUR OWN PERSPECTIVE**

❖ **BECOME AN EXPERT ON YOURSELF**

❖ **LEARN WHAT HEALS YOU**



RESEARCH

Inequalities on how research is reported in the press between orthodox and non-orthodox approaches to cancer have long been a major concern of ours at Cancer Options. It is fair to say that the presentation of information appears to be largely biased towards presenting non-orthodox approaches in an unjustifiably poor light. If there is evidence that is relevant and accurate then that is great, we all want to hear it and learn.

However, when the evidence is presented in a way that just represents poor science that is not fair to anyone, least of all people with cancer who rely on these information sources for making very important decisions. We shall endeavour to bring you the balancing arguments to the major stories that make the press so you can make your own minds up.

REPORTING OF RESEARCH IN THE PRESS

The Guardian

Vitamin C Interferes with Chemotherapy

Some cancer patients take vitamin C supplements to aid their general wellbeing in the belief it boosts their immune system and helps them fight the disease.

But laboratory studies have found that this may be counter-productive.

Researchers at the prestigious Memorial Sloan-Kettering Cancer Centre in Philadelphia, USA, found that every chemotherapy drug they tested did not work as efficiently if the cancer cells had been pretreated with vitamin C.



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In tests, between 30 per cent and 70 per cent fewer cancer cells were killed if they had been treated with vitamin C compared to those not exposed to the vitamin.

These new findings, published in the journal *Cancer Research*, were tested in mice and it was discovered that tumours actually grew faster in mice that had been pre-treated with vitamin C. The tumors in mice not given vitamin C and exposed to normal chemotherapy treatments did not grow.

The team found that the vitamin C was protecting the part of the cancer cells that told it to die when it was damaged by the chemotherapy drugs. The use of vitamin C supplements could have the potential to reduce the ability of patients to respond to therapy," said Dr Mark Heaney, an Associate Attending Physician at Memorial Sloan-Kettering Cancer Centre.

Dr Heaney said that he suspects that vitamin C is good for the cells of normal tissue because it provides more protection for the mitochondria - the power plants of the cell - and thus probably extends cell life.

He added that cancer patients should eat a healthy diet, which includes foods rich in vitamin C but the use of large doses of over-the-counter vitamin C is "worrisome".

Pamela Mason, scientific advisor at the Health Supplements Information Service, said: "Anyone with cancer or any other serious medical condition should seek the advice of their doctor or pharmacist before taking any product not prescribed by their doctor.

"It is important to note that this study was conducted in cancer cells, and in mice, in a laboratory setting. The researchers did not give vitamin C to human beings."



THE BALANCING ARGUMENT

Alliance for Natural Health

Doesn't Work, So Blame Vitamin C

When Memorial Sloan-Kettering Cancer Centre announces that vitamin C may interfere with chemotherapy, the news media trumpet it far and wide. However, before cancer patients throw away their vitamin C supplements, they need to know rest of the story.

Most of the media dutifully reported the researchers' claim that the equivalent of 2,000 mg of vitamin C "blunted the effectiveness of the chemotherapy drugs." But only some of the media included a study author's incredible statement that "If you take an oral dose even as low as 100 milligrams a day" even "that could be harmful" during chemotherapy (1) 100 mg "could be harmful"? That's the amount of vitamin C in a few glasses of orange juice. Something is very wrong here.

First of all, this research involved mice with implanted cancerous tumours; it was not a trial on cancer patients. A mouse study is a long way from a human clinical trial. This obvious difference was conceded by the study authors. However, there is a more subtle, and probably much more important factor they did not consider: all mice make their own vitamin C. Indeed, mice make quite a lot. Adjusted for body weight, mice synthesize the human body weight equivalent of approximately 10,000 milligrams of vitamin C each day. (2) Incredibly, sick mice make even more. Mice given transplanted tumours become sick mice.

Secondly, previous research has demonstrated that mice with cancer respond well to high-dose vitamin C therapy. One study found, "With an increase in the amount of ascorbic acid there is a highly significant decrease in the first-order rate constant for appearance of the first spontaneous mammary tumor. . . Striking differences were observed between the 0.076% ascorbic acid and the control groups, which synthesize the vitamin." (3)



Another study concluded that: "A pronounced effect of vitamin C in decreasing the incidence and delaying the onset of malignant lesions was observed with high statistical significance. By 20 weeks, approximately five times as many mice had developed serious lesions in the zero-ascorbate as in the high-ascorbate group." (4) Interestingly enough, when this research was first publicized, the media discounted these findings saying that mouse studies were not particularly applicable to people.

Thirdly, a mouse's ability to make vitamin C, and a great deal of it, is an overlooked confounding factor that may well render the entire experiment invalid. If the Sloan-Kettering team had tried their experiment on Guinea pigs, their results might have been very different. Guinea pigs are more like human beings in that they cannot make their own vitamin C. As controls for comparison, the researchers also treated "no-added-vitamin C" mouse cancers with chemotherapy. Chemo worked just fine on those mice, by the researchers own admission. And each of those mice was internally synthesizing a body weight equivalent of 10,000 mg/day of vitamin C, even though given none supplementally.

So how come 10,000 mg of vitamin C does not interfere with chemo treatment, and 2,000 mg - or even 100 mg - supposedly does?

A sweeping recommendation warning cancer patients to not take supplemental vitamin C, not even 100 mg, is irresponsible. It is impossible to justify caution about taking 100 mg of vitamin C daily when your animal subjects made the equivalent of one hundred times that amount, and chemotherapy in them was still reported as effective. You cannot have it both ways. If a synthesized 10,000 mg of C does not interfere, there can be no real "interference" or "blunting" from a supplemental 2,000 mg. And most certainly not from 100 mg.

The study did report tumour shrinkage, in both groups of mice receiving chemo. That is not surprising. Chemotherapy's claimed success is based on tumour shrinkage. However, tumour shrinkage, encouraging though it is, is not a reliable indicator of long-term cancer survival. As cancer research critic Philip Day puts it, many patients are "cured but dead" after five years, hardly a long-term survival. Day, noting that this is not because oncologists are not trying, explains the chemotherapy quandary: "You can be insincere, or you can be sincerely wrong." (5)



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The Sloan-Kettering study team seems to have missed the essential point that vitamin C is not just an antioxidant. Inside cancer tumours, it also acts as a prooxidant, killing malignant cells. Comments Dr. Steve Hickey, of

Manchester, UK: "Essentially, the paper seems to be rather misguided and shows a lack of understanding of the dual nature of vitamin C in tumours.

Vitamin C, in doses well over 100 mg/day, is known to help prevent cancer. (7) Nearly 30 years ago, a review concluded that "Many factors involved in host resistance to neoplasia are significantly dependent upon the availability of ascorbate." (8) Beginning in the 1970s, many well-designed studies show that very large doses of vitamin C improve both quality and length of life for cancer patients since they invariably are "significantly depleted of ascorbic acid." When given intravenous vitamin C, "The mean survival time is more than 4.2 times as great for the ascorbate subjects . . . This simple and safe form of medication is of definite value in the treatment of patients with advanced cancer." (9) Additional clinical trials have confirmed this over the past several decades. (10)

Even more importantly, recent research indicates that in high doses, vitamin C is selectively toxic to cancer cells. That means vitamin C can function very much like chemotherapy is supposed to, but without the severe side effects of chemotherapy. "A regimen of daily pharmacologic ascorbate treatment significantly decreased growth rates of ovarian, pancreatic, and glioblastoma tumours established in mice. Similar pharmacologic concentrations were readily achieved in humans given ascorbate intravenously." (11)

"Cautioning" the public to avoid taking any supplemental amount of vitamin C will decrease host resistance to cancer, increase the incidence of this dreaded disease, and shorten survival times. A cynic might say it will also create a larger market for chemotherapy.

Is vitamin C a commercial competitor for chemo? To answer this, one needs to consider what appears to be serious conflict of interest at Sloan-Kettering. Bristol-Myers-Squibb makes chemotherapeutic drugs. According to a DEF 14A SEC filing of March 22, 2006, the Chairman of the Board of Bristol-Myers-Squibb is also a director of the Coca-Cola Company, and Honorary Chairman of Memorial Sloan-Kettering Cancer Center (<http://sec.edgar-online.com/2006/03/22/0001193125-06-060566/Section8.asp>). A



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previous Bristol-Myers-Squibb Chairman of the Board was a director of the New York Times Company. He was also Vice Chairman of the Board of Overseers and the Board of Managers of Memorial Sloan-Kettering Cancer Center and Chairman of the Board of Managers of Sloan-Kettering Institute for Cancer Research (<http://www.secinfo.com/dsvrt.bC7.htm>). Some sources say that there are even more Bristol-Myers-Squibb directors who have or held positions on the board at Memorial Sloan-Kettering Cancer Center. (12)

Positive endorsements for vitamin C as a cancer fighter are not in the interests of any pharmaceutical company. Scaring the public away from vitamin C might be profitable. It appears that Sloan-Kettering is biased. So are media reports that attack vitamins.

If the Sloan-Kettering study authors' recommendations to not take 2,000 mg, or even 100 mg, of vitamin C are followed, there will definitely be an increase in the number of people that need chemotherapy.

References available on request – too numerous to put in newsletter



COMING SOON

Coming soon! (and we don't mean in ten years time – we are not the Daily Mail!)

Here we shall inform you of a few of the treatment developments that are looking promising and are also either available in limited places now or are likely to be soon.

RADIOFREQUENCY ABLATION OF SMALL LUNG TUMORS CAN BE CURATIVE

Radiofrequency ablation (RFA) of lung tumours in patients who are not candidates for surgery and would otherwise receive only palliative treatment can extend survival; some patients live an extra 2 years. But success with this technique is limited by the size of the tumour and works best for very small tumours.

Speaking at the Society of Interventional Radiology 33rd Annual Scientific Meeting, in Washington, DC, earlier this week, Thierry de Baere, MD, from the Institut Gustave Roussy, in Villejuif, France, reported a success rate of more than 90% for tumours up to 3.5 cm. However, the success rate falls to around 70% when the tumours are up to 5 cm in size and to less than 50% when the tumours are larger.

Dr. de Baere reported on a series of 244 patients who had undergone RFA for either lung metastases (195 patients) or primary non-small-cell lung cancer (NSCLC; 49 patients). Follow-up showed that 70% of these patients were still alive at 2 years (72% of those with lung metastases and 64% of those with NSCLC).

About two-thirds of patients diagnosed with NSCLC are ineligible for surgery and typically have less than 12 months to live, Dr. de Baere explained. Usually they are offered only palliative options, such as chemotherapy or radiation. "A subset of these patients ineligible for surgery can be treated with RFA with the intention of curing the primary tumour. Thus, 70% of my patients gained at least another 2 years," he said.



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Among the 49 patients with primary NSCLC treated with RFA, imaging showed no viable lung tumour in 85% of patients at 1 year and no viable lung tumour in 77% at 2 years. This can be considered a cure, Dr. de Baere commented. These tumours were all smaller than 4 cm, he noted, and the results should be even better in tumours that are smaller.

In France, RFA is carried out under general anesthetic, but in the United States it is often carried out under conscious sedation. Recovery is quick, and the majority of patients have no symptoms after discharge. Dr. de Baere reported that from his group's series of 244 patients, 66% reported no symptoms after discharge, 23% reported pain (mild in 4% and moderate in 19%), 5% reported hemoptysis, 3% reported pneumopathy, and 0.5% reported respiratory insufficiency. In his institution, RFA has already replaced surgery as the preferred treatment option for small tumours, and even patients who are able to withstand surgery opt to have this therapy instead, he told the meeting.

Society of Interventional Radiology (SIR) 33rd Annual Scientific Meeting:
[Abstract 106](#). Presented March 17, 2008.

Currently available in England, limited NHS access and no limitation privately



ELECTRO CHEMOTHERAPY

Electro chemotherapy is a new treatment available to patients presenting with cancer. This technique combines treatment of cancer lesions with an anti cancer drug, followed by introducing a small electric field to the lesion. The electric field lasts only for less than a second and causes the pores in the cancer membrane to open during this time. This allows more of the anti cancer drug to enter the cancer cells with a dramatic increase in effectiveness of treatment.

Electro chemotherapy treatment utilises a technique where tumour tissue is exposed to intralesional or intravenous Bleomycin, followed by application of an electric field to the tumour tissue by a hand held electrode.

Electrochemotherapy is, in many cases, a one-off treatment with no further treatment necessary, It has been successfully used in treatment of metastatic (seedling) cancer nodules within and below the skin surface. It is especially useful in bleeding or painful lesions and can be used in skin areas that have been treated with radiotherapy. Electrochemotherapy can be considered as a palliative (non curative) option in cancers where surgery or radio/chemotherapy treatment is not a possibility.

The treatment is performed as a day case procedure and it is not necessary to stay on in the hospital after the treatment. In most cases a local anaesthetic is injected into the cancer lesion before treatment, or less commonly a short general anaesthetic is needed. The cancer drug is then either directly injected into the cancer lesion or given as a drip. This is followed by applying a small electric current to the cancer cells. This is done by inserting a handheld electrode with a plate or needles at the end into the tissue. The electric pulse that is delivered lasts for only a few seconds. You would not need any special dressings, and will usually be seen 3 to 4 weeks after the treatment.

James Cook University Hospital was the first major site in the UK where Electrochemotherapy was provided to patients under strict guidance and



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monitoring; following the published treatment guidelines from the large multi-centre trial.

The studies performed have all shown that this is an effective treatment in many patients. Between 79% and 85% of patients benefit from the treatment, and in about 2/3 of patients the cancer nodule disappears altogether. These results were obtained after a single treatment in most cases.

Minimal complications were reported, with mild pain or discomfort, never to the extent that a patient would not have a repeat treatment and short lasting muscle contractions during the pulse application.

Who Benefits from Electrochemotherapy?

Treatment of Skin or other Metastases (seedling cancer lesions)

Treatment of bleeding or painful cancer lesions

Previously Unsuccessful Skin Cancer Treatment

Patients who have had previously unsuccessful skin cancer treatments such as surgery, radiotherapy and chemotherapy

In Place of Disfiguring Surgery



Patients concerned about cancer surgery, such as cancer of the lip, cancer of the tongue, and other head and neck cancers where conventional treatments are not possible or would lead to significant disfigurement'

Elderly Patients

Elderly patients who cannot be treated with other therapies

Large Tumours

Patients whose tumours are too large for surgery may have Electrochemotherapy in order to shrink the tumour



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Range of Tumours Treated
Basal cell carcinoma (BCC)
Squamous cell carcinoma (SCC)
Advanced melanoma
Recurrence of breast cancer
Secondary kidney cancer
Secondary prostate cancer

Clinical Trials and Data

Clinical Trials and Statistics:

The studies performed have all shown that this is an effective treatment in many patients. Between 79% and 85% of patients benefit from the treatment, and in about two out of three patients the cancer nodule disappears altogether. These results were obtained after a single outpatient treatment in most cases.

The technique of Electrochemotherapy has been extensively studied with published results in 297 patients in which 1292 cancer lesions were treated. The studies include a multi-centre trial that has been performed between five hospitals in Europe and America.

Currently availability in England on both NHS and private, limited facilities.

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ONE-WEEK GENE TEST FOR BRCA1 AND BRCA2

Genetic testing is already available to women with a history of breast cancer in their families.

But now scientists led by Cancer Research UK's Professor Graham Taylor are developing a more advanced version of a technique called sequencing, which looks for changes in your DNA (the genetic code we are all made up of) to find the faulty genes.

Existing techniques look at large amounts of DNA but the next-generation sequencing makes the process of spotting faults much faster.

THE BENEFITS

Current testing is expensive - a single test costs up to £1,000. And it can take up to 18 weeks to get the results privately, on the NHS results can take up to 12 months. This new test, however, is expected to give results in a week and will be a fraction of the cost at just £10.

"We hope this technology will speed up the process of BRCA1 or BRCA2 testing, so that women don't have to wait as long to find out if they have inherited one of these genetic faults," says Cancer Research UK's chief scientist Professor Sir David Lane.

Availability: soon, will let you know.



NEWS ON NATURAL COMPOUNDS HELPFUL WITH CANCER

NOVEMBERS FEATURE:

SUPPLEMENTS THAT INCREASE THE EFFECTIVENESS OF HORMONE TREATMENT FOR BREAST CANCER

GREEN TEA ENHANCES EFFECTIVENESS OF TAMOXIFEN

Epidemiologic data has suggested that green tea may prevent breast cancer and aid in its treatment. Studies in our laboratory have provided evidence that green tea extract inhibits breast cancer growth by a direct anti-proliferative effect on the tumour cells, as well as by indirect suppressive effects on the tumour associated endothelial cells. In this study, we asked whether concurrent administration of green tea may add to the anti-tumour effects of standard breast cancer therapy. We observed that green tea increased the inhibitory effect of tamoxifen on the proliferation of the ER (estrogen receptor)-positive MCF-7, ZR75, T47D human breast cancer cells in vitro. This combination regimen also was more potent than either agent alone at increasing cell apoptosis. In animal experiments, mice treated with both green tea and tamoxifen had the smallest MCF-7 xenograft tumour size, and the highest levels of apoptosis in tumour tissue, as compared with either agent administered alone.

Moreover, suppression of angiogenesis in vivo correlated with larger areas of necrosis and lower tumour blood vessel density in treated xenografts. Green tea decreased levels of estrogen receptor- α (ER) in tumours both in vitro and in vivo. We also observed that green tea blocked ER-dependent transcription, as well as estradiol-induced phosphorylation and nuclear localization of

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mitogen activated protein kinase (MAPK). To our knowledge, this study is the first to show the interaction of green tea with the ER pathway, as well as provide mechanistic evidence that the combination of green tea and tamoxifen is more potent than either agent alone in suppressing breast cancer growth. These results may lead to future improvements in breast cancer treatment and prevention.

A NEW ROLE FOR TAMOXIFEN IN OESTROGEN RECEPTOR-NEGATIVE BREAST CANCER WHEN IT IS COMBINED WITH EPIGALLOCATECHIN GALLATE (GREEN TEA)

Green Tea Ingredient Slows Breast Cancer

Antioxidant in Green Tea May Stop Breast Cancer Growth

Reviewed by Louise Chang, MD

April 7, 2008 -- An antioxidant in green tea may be a powerful weapon against breast cancer.

A new study shows the green tea antioxidant EGCG (epigallocatechin-3-gallate) significantly slowed breast cancer growth in female mice.

Previous studies have suggested that this antioxidant may protect against breast cancer and other cancers, but this research has been limited, and the mechanism behind these effects isn't clear.

Researchers say the results suggest that green tea's anticancer effects may be largely because of its high content of EGCG, which helps the body's cells from becoming damaged and aging prematurely.

Behind Green Tea's Anticancer Effect

In the study, presented this week at the Experimental Biology 2008 conference, researchers examined the effects of the green tea antioxidant on several indicators of breast cancer growth in laboratory mice.



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One group of the female mice was fed a solution of the antioxidant in water for five weeks while the other received regular drinking water. During the second week of the study, researchers injected both groups with breast cancer cells.

At the end of the study, researchers measured tumor size, weight, and density as well as VEGF protein levels associated with tumor growth.

The results showed that treatment with the green tea antioxidant decreased tumor size by 66% and weight by 68% compared with the control group. Mice fed the antioxidant also had significantly lower density of small blood vessels within tumors and VEGF protein levels.

Researcher Jian-Wei Gu, of the University of Mississippi Medical Center in Jackson, says the green tea antioxidant may work against breast cancer by suppressing blood vessel growth in breast tumors as well as slowing the proliferation and migration of breast cancer cells.



INDOLE-3-CARBINOLE

Indole-3-carbinol is a very useful supplement with breast cancer and has, like green tea been shown to increase the effectiveness of tamoxifen and arimidex. It has a number of potential mechanisms of action for chemoprevention of cancer. It was one of only eight compounds (including ascorbic acid, vitamin E succinate, and folic acid) found to have benefit in six different in vitro chemoprevention models in a National Cancer Institute screening study. While many mechanisms have been described, it is possible others exist, particularly among the minor I-3-C metabolites that have not been well studied.

Several studies have examined the effects of I-3-C and its metabolites on breast cancer cell lines. I-3-C and tamoxifen have been shown to act separately and/or cooperatively to inhibit the growth of estrogen receptor-positive (ER+) breast cancer cells. (7) Tamoxifen and I-3-C appeared to function by different mechanisms. I-3-C can stimulate apoptosis in estrogen receptor-negative human breast cancer cell lines as well. (8)

Amounts of metabolites can be effectively increased by the consumption of daily cruciate vegetables., or if necessary, by supplementation.
Supporting Evidence

Indole-3- (I-3-C) is a naturally occurring constituent of many plant foods. Oral administration of I-3-C has been shown to manipulate estrogen metabolism in humans in a possibly beneficial manner. I-3-C increases the 2/16-hydroxyestrone ratio, a ratio found to be predictive of breast cancer risk in some prospective studies. Animal and in vitro studies have identified a number of other possibly beneficial effects of I-3-C and its metabolites, including inhibition of estrogen binding and modulation of oncogene expression. A chemopreventive effect of I-3-C has been demonstrated in a number of animal models. Some chemical carcinogenesis models have found a tumor promoting effect of I-3-C, however. Epidemiological studies support the hypothesis that high intakes of I-3-C may have broad chemopreventive effect. Preliminary human trials have demonstrated that I-3-C is well tolerated and has a sustained estrogen modifying effect. I-3-C is a good candidate for clinical trial in women at increased risk of developing breast cancer.



(Altern Med Rev 2001;6(6):580-589)

Introduction

Indole-3-carbinol (I-3-C) is a compound found in high concentrations in Brassica vegetables, including broccoli, cauliflower, Brussels sprouts, and cabbage. It has received attention in recent years as a promising preventive and treatment agent for breast and other types of cancers.

I-3-C (Figure 1) has recently become available as a nutritional supplement. Preliminary studies have examined its safety and attempted to elucidate an optimal dose. Early studies have been promising, and will likely be followed up with larger clinical trials. This paper will examine the evidence supporting the use of I-3-C for prevention and treatment of cancer from human, animal, and in vitro studies. It will also review the metabolism and safety of oral I-3-C.

Animal studies have shown DIM and LTr-1 to be the major serum metabolites following oral administration of I-3-C, (4) although other metabolites are measurable in smaller amounts on high performance liquid chromatography (HPLC). DIM and LTr-1 levels were roughly equivalent, with different metabolites being more prevalent in different organs. Another study quantified hepatic concentrations of I-3-C metabolites, finding 24-percent DIM, 20-percent LTr-1, 24-percent of another metabolite called 1-(3-hydroxymethyl)-indolyl-3-indolylmethane, and a number of minor metabolites. (5) In this latter study, the potent metabolite ICZ was found in very small concentrations, at an order of magnitude smaller than the major metabolites.

In vitro/In vivo Mechanisms of Action

Indole-3-carbinol has a number of potential mechanisms of action for chemoprevention of cancer. It was one of only eight compounds (including ascorbic acid, vitamin E succinate, and folic acid) found to have benefit in six different in vitro chemoprevention models in a National Cancer Institute screening study. (6) While many mechanisms have been described, it is possible others exist, particularly among the minor I-3-C metabolites that have not been well studied.

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separately and/or cooperatively to inhibit the growth of estrogen receptor-positive (ER+) breast cancer cells. (7) Tamoxifen and I-3-C appeared to function by different mechanisms. I-3-C can stimulate apoptosis in estrogen receptor-negative human breast cancer cell lines as well. (8)

DIM (Figure 2) has been shown to inhibit proliferation of human breast cancer cells at concentrations achievable through oral supplementation with I-3-C (10-50 microM). (9) Incubation of human breast cancer cells with DIM has been found to stimulate apoptosis. (10) In this study, the apoptosis-promoting activity of DIM was found to be p53 independent

Clinical Trial Data

Several clinical trials have demonstrated the ability of oral supplementation with indole-3-carbinol to increase the 2-hydroxylation of estrogens. A dose-ranging trial found that an oral dose of 300 or 400 mg per day of I-3-C for four weeks was sufficient to significantly increase the urinary 2:16-hydroxyestrone ratio. (46) In another trial, significant increases of urinary 2-hydroxyestrone were seen in five obese women taking 400 mg per day of indole-3-carbinol for two months. (47)

A group of 20 premenopausal women, judged to be at high risk for breast cancer, were supplemented with 400 mg/day I-3-C for three months. (48) Compared to women taking a fiber supplement or placebo, the women taking I-3-C had a statistically significant increase in urinary 2:16-hydroxyestrone ratios. Only three of the 20 women taking I-3-C did not have a clinical response. No adverse effects were noted in this clinical trial.

Patients with recurrent respiratory papillomatosis (n=18), a benign condition of the respiratory tract thought to be associated with human papilloma virus, were supplemented with 200 mg of indole-3-carbinol twice daily (or corresponding pediatric dose). (49) Six patients showed a complete cessation of papilloma growth, and another six patients showed a reduced growth rate. The authors concluded in their preliminary trial that indole-3-carbinol was a safe and efficacious treatment for recurrent respiratory papillomatosis.

The potential for Brassica family vegetables containing dietary indoles to manipulate estrogen metabolism was quantified in a clinical trial. (50) In healthy, postmenopausal women, each 10 g/day increase in Brassica intake led to an increase of 0.08 in the urinary 2:16-hydroxyestrone ratio. The



effect of whole foods versus I-3-C has yet to be compared in similar populations.

Women in the upper decile (10%) of Brassica vegetable intake were found to be at a 40-percent lower risk for breast cancer in a case-control study.

A retrospective study with over 1200 participants found that men eating three or more servings of cruciferous vegetables per week were 40-percent less likely to develop prostate cancer than men eating less than one serving per week. (53) Epidemiological studies have also shown increased intake of cruciferous vegetables to be associated with lower risk of lung cancer (54) and non-Hodgkin's lymphoma. (55) One review article reported that 64 percent of published studies found a significant inverse correlation between Brassica vegetable intake and risk of various types of cancer. (56) The most consistent protective effect was seen in lung, stomach, colon, and rectal cancers.

Administration of I-3-C to mice in large doses (34-700 mg/kg/day) has been shown to reduce the incidence of spontaneous mammary tumor formation. (57) Even at these large doses, toxicity was not noted. Large doses of I-3-C (50-100 mg/day) have also been shown to greatly decrease chemical carcinogenesis in rat mammary tissue. (58)

I-3-C appears to be a safe and promising prevention strategy for breast cancers. The dose required for optimal estrogen metabolite manipulation and minimal side effects has been demonstrated by human trials. While more research needs to be done to elucidate all of the mechanisms of action, I-3-C is ready for large-scale clinical trials in populations judged to be at high risk of developing breast cancer.

Other tumor types may be responsive to I-3-C as well. Prostate, lung, and head and neck cancers are the cancer types with the most animal and in vitro support, but other types may be found in the future. Given the direct effect of I-3-C on tumor suppressor genes and oncogenes (including p27, p21, ODC, and NF-kappa-B) there may be a broad applicability of this agent in cancer prevention. Hopefully, future studies will be able to further elucidate the mechanisms behind the tumor promotion seen in certain animal models.

Available from www.nutrition-marketplace.co.uk

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ABOUT CANCER OPTIONS

Cancer Options is a private, cancer consultancy where you can obtain consultancy, research and coaching for all the different cancer treatments and therapies.

You will find the best of orthodox and complementary approaches evaluated by Britain's leading experts in the integrative field.

Only Cancer Options brings this unique and unbiased appraisal of both orthodox and complementary approaches.

We are the only professional service with the knowledge and experience of all approaches to cancer to guide you to safe and effective treatment choices

THE CANCER OPTIONS TEAM

Patricia Peat

RGN Dip Pall C Dip UTR

The Founder of Cancer Options

After many years as an oncology nurse Patricia saw the need for people to have access to good quality information about all approaches to treatment so they could take charge of their cancer decisions.

Passionate about encouraging the safe integration of complementary treatments with orthodox, she has developed Cancer Options into a renowned service at the forefront of cancer treatment developments.

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ARCS

Director of Research

Dr. Christopher Etheridge trained at Imperial College London, and later at the Department of Biochemistry and Molecular Genetics at St. Mary's Hospital, Paddington and Department of Chemistry, Imperial College, where he holds three patents in Gene Therapy.

Christopher now holds a degree in the practice of Herbal Medicine (Phytotherapy).

Dr. Etheridge directs our research from his background as a medical researcher and junior lecturer at Imperial College, and from his knowledge of Complementary and Alternative Medicine.

He also now has his own thriving herbal practice, and is fast gaining a reputation of one of the most knowledgeable practitioners in his field.

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