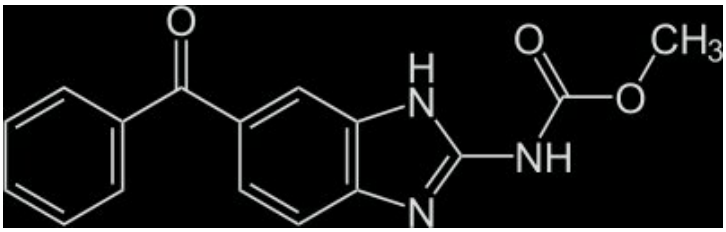
rexresearch.com

Mebendazole vs Cancer



http://www.viewzone.com/mebendazole.html

Mebendazole -- Inexpansive Cancer Cure?

by Dan Eden

Good News!

Ordinarily, an article like this might not appeal to someone with a minimal interest in biology. But this article is about cancer. That's something that we will all experience, either personally or with someone close to us.

I'm not going to bore you with statistics or preach about unhealthy lifestyles or genetics. The fact is that we all get cancer in our lifetime -- probably many times. Our bodies usually defend against the cancerous cells and they are destroyed before they can do any damage. Unfortunately, for some people, the battle isn't so easy and the outcome unclear.

But wait... there is good news. It's a medicine that seems too good to be true, yet it is. And get this -- it costs just a couple of dollars and its in most every local pharmacy. It's anti-cancer success has been well documented in journals (which I will show you) -- even with cancers that are unresponsive to other chemotherapy. While it kills cancer cells it poses no harm to the normal cells and has little or no side effects. It's called mebendazole and "Big Pharma" hopes you will never hear about it.

Mebendazole (MBZ)

If you have ever cared for young children then you are probably familiar with this medicine under the name of Vermox, Ovex, Antiox, and Pripsen. It is usually prescribed to treat pinworms, roundworms, whip worms and hookworms -- organisms that find an unwelcome home in our intestines. For some time now, scientists have known how it works, but the method of death meted out to the targeted parasites was of little interest to them. But that has since changed.

How it works...

This next part gets a little technical. I'll try to explain things in a general way. I'm by no means a scientist or biologists but I'll share with you what I have learned.

One of the misconceptions that people have about a cell is that it contains a nucleus, a cell wall and everything inside (cytoplasm) kind of sloshes around in a liquid or gel. In fact, the inside of a cell contains a kind of scaffold made of micro-tubules, also called spindles, that have the ability to assemble and disassemble quicky. This network of rigid micro-tubules inside the cell gives it shape, structure and also has the ability to transfer organelles and various molecules to different parts within the cell, functioning like a railway system. But its most vital function is cell division.

You will easily understand the role of spindles by viewing this short animation.

Here is a video of the micro-tubules, showing how they assemble and dis-assemble. This is quite an amazing design and reminds us of the complexity of life.

Mebendazole is known to interfere and inhibit the assembly of the spindles, thus preventing the ability of the cells to divide. The cell eventually dies of old age or aptosis. Mebendazole is highly selective and somehow targets only cancerous cells (as well as a host of intestinal parasites). At the end of this article I will post a few of the many scientific papers acknowledging these facts.

You will also see why there is virtually no pharmaceutical interest in mebendazole. The big pharmaceutical companies are promoting more toxic chemotherapy drugs because there is no profit margin in mebendazole. It's yet another example of corporate profit outweighing human benefits.

What is Cancer?

When a cell divides, the common notion is that the two resulting cells are exactly identical. This is not correct. The process of copying DNA is not perfect and there are usually errors, although these are typically not serious. In fact, if a cell has too many errors in its DNA code it will not be able to reproduce and the errors die with that cell.

Human cells have a maximum number of times that they can reproduce themselves before the accumulated errors finally prevent reproduction -- it's called the Hayflick Limit. Most scientists agree that this number is around 60 times.

This "programmed" lifespan of a cell is determined by the length of a benign string of molecules attached to the ends of the DNA coils. Like leaders on a movie film, these break off or become misaligned during the replication process and provide a buffer zone, protecting the real DNA code. The longer a cell's leader, called a telomere, the more it can reproduce and the longer an organism can live.

Biologists have found that cancer cells are cells in which the damaged DNA code results in the activation of the telomere, causing it to regrow. The hayflick limit becomes infinite. The mutation makes the cell essentially immortal! Cancer does its damage by outliving and outnumbering the normal cells.

The fight against cancer has been one of isolation and selectively poisoning the cells. When cancer cells have integrated themselves in vital tissues, this becomes a major problem. Often, surgical attacks of cancerous tissue seems to stimulate their growth even more, resulting in a temporary relapse with regrowth. Likewise, chemotherapy and radiation are not selective enough to protect healthy cells and their method of death is toxic.

Mebendazole is different. It doesn't kill the cells with poison. It specifically prevents the cell from reproducing.

What has Big Pharma done?

Mebendazole was first synthesized by Janssen Pharmaceutical (later bought by Johnson & Johnson) in 1968. Its value as an anti-worm medicine was recognized and by 1972 mebendazole was being marketed under the name Vermox. Because the prescribed use was eliminating parasites it was inexpensive and widely used. The selective toxicity of mebendazole to cancerous cells had not yet been discovered.

Back in 1960 the US Goverment declared war on cancer and funded the Cancer Chemotherapy National Science Center. This agency received over 1000 samples of chemicals -- mostly synthetic -- that were exposed to a variety of animal and human cancer cells.

It must have been like a scene from the movie, Andromeda Strain, where thousands of substances were tested to kill the alien virus brought back in an interstellar probe. With such large sample numbers it was expected that some would prove effective in killing tumors. And that's exactly what happened.

In 1964 a worker at a contractor for the Center thought to include some natural chemistry in the study. He submitted a resin from the bark of the Pacific Yew tree (Taxus brevifolia), an endangered species endemic to the Washington State. It killed tumor cells while not harming healthy cells. They called it Taxol.

The down side to this discovery was that it took 12,000 pounds of fresh Yew bark to make just 10 grams of Taxol! At first, no pharmaceutical company was interested in developing the drug and trials with human subjects were put off. Only in 1979, when Taxol was shown to interfere with micro-tubules, did it receive revived interest as a profitable anti-cancer medicine.

Same, Same, but Different

Researchers were discovering the value of microtubule inhibitors in 1978. The safest one, mebendazole, was already on the market as a treatment for worms, and it was cheap. For a pharmaceutical company to invest in a cancer cure, it had to make a profit. So the next best candidate was the resin in the Pacific Yew -- Taxol.

Taxol is a microtubule inhibitor... sort of. Rather than prevent the tubules from forming, like mebendazole, Taxol acts like a glue and prevents the tubules from disassembly. It's a process called polymerization. This damages the internal structure of the cell in ways not related only to cell division. The side-effects of Taxol are many, while mebendazole has a reputation for being harmless and well tolerated.

But there's another big difference between Taxol and mebendazole -- the price. Taxol costs more than $200 a dose compared with the $2 for some chewable Vermox pills.

A prophylaxis agent?

Before I list the studies, I could not help but wonder why a person wouldn't take mebendazole periodically in one's life to purge the body of cancerous cells. It is known to be well tolerated with little toxicity. In some of the studies I will quote, mebendazole was taken with Tagamet(TM) to reduce the metabolizing effects of the liver and increase blood levels. This would appear to be an idea that ought to be explored.

Mebendazole is not currently recognized as an anti-cancer drug. The lack of investment by Big Pharma in conducting the many trials and protocols will likely not change this status. But physicians are capable of prescribing the medicine at their own discretion. And ordinary people should be able to secure this medicine themselves.

As promised -- here are some references for further research of mebendazole:

The Anthelmintic Drug Mebendazole Induces Mitotic Arrest and Apoptosis by Depolymerizing Tubulin in Non-Small Cell Lung Cancer Cells, Ji-ichiro Sasaki,Rajagopal Ramesh,Sunil Chada,Yoshihito Gomyo,Jack A. Roth andTapas Mukhopadhyay, Molecular Cancer Therapy November 2002 1; 1201

"... Oral administration of MZ in mice elicited a strong antitumor effect in a s.c. model and reduced lung colonies in experimentally induced lung metastasis without any toxicity when compared with paclitaxel-treated mice. [emphasis added] We speculate that tumor cells may be defective in one mitotic checkpoint function and sensitive to the spindle inhibitor MZ. Abnormal spindle formation may be the key factor determining whether a cell undergoes apoptosis, whereas strong microtubule inhibitors elicit toxicity even in normal cells..."

Mebendazole Elicits a Potent Antitumor Effect on Human Cancer Cell Lines Both in Vitro and in Vivo, Tapas Mukhopadhyay,Ji-ichiro Sasaki,Rajagopal Ramesh, and Jack A. Roth, Clinical Cancer Research September 2002 8; 2963

"We have found that mebendazole (MZ), a derivative of benzimidazole, induces a dose- and time-dependent apoptotic response in human lung cancer cell lines. In this study, MZ arrested cells at the G2-M phase before the onset of apoptosis, as detected by using fluorescence-activated cell sorter analysis. MZ treatment also resulted in mitochondrial cytochrome c release, followed by apoptotic cell death. Additionally, MZ appeared to be a potent inhibitor of tumor cell growth with little toxicity to normal WI38 and human umbilical vein endothelial cells. When administered p.o. to nu/nu mice, MZ strongly inhibited the growth of human tumor xenografts and significantly reduced the number and size of tumors in an experimental model of lung metastasis. In assessing angiogenesis, we found significantly reduced vessel densities in MZ-treated mice compared with those in control mice. These results suggest that MZ is effective in the treatment of cancer and other angiogenesis-dependent diseases..."

Mebendazole Induces Apoptosis via Bcl-2 Inactivation in Chemoresistant Melanoma Cells, Nicole Doudican, Adrianna Rodriguez, Iman Osman and Seth J. Orlow, Molecular Cancer Research, August 2008 6; 1308

"...Our results suggest that this screening approach is useful for identifying agents that show promise in the treatment of even chemoresistant melanoma and identifies mebendazole as a potent, melanoma-specific cytotoxic agent..."

Mebendazole inhibits growth of human adrenocortical carcinoma cell lines implanted in nude mice, Daniele Martarelli, Pierluigi Pompei, Caterina Baldi and Giovanni Mazzoni, Cancer Chemotherapy and Pharmacology, Volume 61, Number 5, 809-817

"Adrenocortical carcinoma is a rare tumor of the adrenal gland which requires new therapeutic approaches as its early diagnosis is difficult and prognosis poor despite therapies used. Recently, mebendazole has been proved to be effective against different cancers. The aim of our study was to evaluate whether mebendazole may result therapeutically useful in the treatment of human adrenocortical carcinoma. We analyzed the effect of mebendazole on human adrenocortical carcinoma cells in vitro and after implantation in nude mice. In order to clarify mechanisms of mebendazole action, metastases formation, apoptosis and angiogenesis were also investigated. Mebendazole significantly inhibited cancer cells growth, both in vitro and in vivo, the effects being due to the induction of apoptosis. Moreover, mebendazole inhibited invasion and migration of cancer cells in vitro, and metastases formation in vivo. Overall, these data suggest that treatment with mebendazole, also in combination with standard therapies, could provide a new protocol for the inhibition of adrenocortical carcinoma growth..."

Mebendazole Monotherapy and Long-Term Disease Control in Metastatic Adrenocortical Carcinoma, Irina Y. Dobrosotskaya, MD, PhD, Gary D. Hammer, MD, David E. Schteingart, MD, Katherine E. Maturen, MD, Francis P. Worden, MD, Endocrine Practice, Volume 17, Number 3 / May-June 2011

"...A 48-year-old man with adrenocortical carcinoma had disease progression with systemic therapies including mitotane, 5-fluorouracil, streptozotocin, bevacizumab, and external beam radiation therapy. Treatment with all chemotherapeutic drugs was ceased, and he was prescribed mebendazole, 100 mg twice daily, as a single agent. His metastases initially regressed and subsequently remained stable. While receiving mebendazole as a sole treatment for 19 months, his disease remained stable. He did not experience any clinically significant adverse effects, and his quality of life was satisfactory. His disease subsequently progressed after 24 months of mebendazole monotherapy. Conclusion: Mebendazole may achieve long-term disease control of metastatic adrenocortical carcinoma. It is well tolerated and the associated adverse effects are minor...."

Antiparasitic mebendazole shows survival benefit in 2 preclinical models of glioblastoma multiforme, Ren-Yuan Bai, Verena Staedtke, Colette M. Aprhys, Gary L. Gallia and Gregory J. Riggins, Neuro Oncology, (2011) 13(9): 974-982

"...mebendazole significantly extended mean survival up to 63% in syngeneic and xenograft orthotopic mouse glioma models. Mebendazole has been approved by the US Food and Drug Administration for parasitic infections, has a long track-record of safe human use, and was effective in our animal models with doses documented as safe in humans. Our findings indicate that mebendazole is a possible novel anti-brain tumor therapeutic that could be further tested in clinical trials...

I'd like to hear from anyone with experience or additional information on this drug.

Epilogue: Discontinuation in United States

The last manufacturer of mebendazole in the United States, Teva Pharmaceuticals, announced on October 7, 2011, that they have ceased manufacture of this product. As of December, 2011, it is no longer available from any manufacturer in the USA. No reason was given for this discontinuation, but it's blatantly obvious.

---

http://www.ebay.com/itm/Parasite-Killing-Cleanse-VERMOX-Worm-Protector-/320858323176?pt=LH_DefaultDomain_0&hash=item4ab4a578e8

VERMOX

Active substance: Mebendazole
6 Tablets 100mg

by

Gedeon Richter
(Hungary)

Pharmacological effects:

Brand Vermox is an antihelminthic drug with a broad action spectrum. Vermox is highly effective for enterobiasis and trichocephaliasis treatment. Vermox works by interfering with the glucose utilization in the helminth's tissue. Vermox also helps to inhibit the synthesis of tubulin and slow down the production of ATP.

Indications: Brand Vermox is used for the treatment of the following diseases:

* Enterobiasis
* Ascariasis
* Hookworm disease
* Strongyloidosis
* Trichocephaliasis
* Echinococcosis
* Various nematodes
* Alveococcosis disease
* Capillariasis
* Gnathostomosis
* Various helminth infection

Warnings and Precautions: The drug should not be used in the following conditions:

* Hypersensitivity to any components of the preparations.
* Pregnancyand lactation period
* Child age (up to age of 2)
* Nonspecific ulcerative colitis
* Grohn's disease
* Liver decompensation

Vermox side effects:

Drugs may cause side-effects which in specific patients may manifest differently. In the following paragraph we want to underline the most serious and frequent side effect of Brand Vermox that were identified by the drug manufacturers. The possibility of the adverse effect manifestation depends only on the individual and his specific traits. Mebendazole side effects include:

* Dizziness, headaches, nausea, vomiting, stomachache, diarrhea
* Allergic reactions: skin rash, nettle rash, angioneurotic edema,
* “Liver” transaminase activity increase
* Hypercreatinemia
* Leukopenia
* Anemia
* Eosinophilia
* Hair loss
* Erythrocyturia
* Negative influence on the fetation

For full information on any risks and adverse effects associated with Vermox, please consult your doctor, read the included leaflet or contact our customer support service.

Interactions: Before using Vermox please tell your doctor which drugs or supplements you are already taking including those bought without a prescription. Also check if any additional medicine which you will take during the course of Mebendazole therapy are safe in combination. Especially mention if you are taking the following groups of drugs:

* Insulin
* Lipophilic substances
* H2-histamine receptors blocker
* Anticonvulsants

Patients information:

Mebendazole is not to be shared with healthy individuals. It is strictly FORBIDDEN to use the drugs in treatment of any conditions unrelated to their indications. The product as well as utilized vials, syringes, needles if used during the course of treatment should be kept out of reach of children and never reused.

Dosage:

Orally pills.
Enterobiasis - adults and adolescents, 100 mg, children 2-10 years - 25-50 mg dose, and again after 2-4 weeks in the same doses.
Ascariasis, trichuriasis, hookworm disease, taeniasis, strongyloidiasis and mixed helminthiasis - 100 mg in the morning and evening for three days.
Trichinosis - 200-400 mg 3 times daily for 3 days, and from 4 th to 10 th - 400-500 mg 3 times a day.
Echinococcosis - 500 mg two times a day the first 3 days and 3 times a day over the next 3 days. Later appointed to 25-30 mg / kg per day in 3-4 doses.

***J Pharm Sci.* 97(1):542-52 (Jan. 2008)**
Synthesis and characterization of a new mebendazole salt: mebendazole hydrochloride.

Brusau EV, Camí GE, Narda GE, Cuffini S, Ayala AP, Ellena J.

Química Inorgánica, Departamento de Química, Facultad de Química, Bioquímica y Farmacia, Universidad Nacional de San Luis, Chacabuco y Pedernera, 5700 San Luis, Argentina.

Abstract

Mebendazole hydrochloride [(5-benzoyl-1H-benzimidazole-2-yl)-carbamic acid methyl ester hydrochloride, MBZ.HCl], a new stable salt of mebendazole (MBZ), has been synthesized and characterized. It can easily be obtained from recrystallization of forms A, B, or C of MBZ in diverse solvents with the addition of hydrochloric acid solution. Crystallographic data reveals that the particular conformation adopted by the carbamic group contributes to the stability of the network. The crystal packing is stabilized by the presence of three N-H...Cl intermolecular interactions that form chains along the b axis. The XRD analyses of the three crystalline habits found in the crystallization process (square-based pyramids, pseudohexagonal plates, and prismatic) show equivalent diffraction patterns. The vibrational behavior is consistent with crystal structure. The most important functional groups show shifts to lower or higher frequencies in relation to the MBZ polymorphs. The thermal study on MBZ.HCl indicates that the compound is stable up to 160 degrees C approximately. Decomposition occurs in four steps. In the first step the HCl group is eliminated, and after that the remaining MBZ polymorph A decomposes in three steps, as happens with polymorphs B and C.

Synthesis

***Parasitology Today* 6(4):107 (1990); The Synthesis & Chemistry of Certain Anthelmintic Benzimidazoles (PDF)**

Sciencedirect.com
***Bioorganic & Medicinal Chem.* 11:4615-4622 (2003); Synth. & Antiparasitic Activity of Albendazole & Mebendazole Derivatives (PDF)**
