Does Vitamin B17 (Amygdalin/Laetrile) Cure or Prevent Cancer?

An in-depth look at the evidence for vitamin B17 and cancer

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There is a lot of controversy surrounding Vitamin B17 and cancer. You may have seen websites or books proclaiming the wonders of vitamin B17 and how it can cure or prevent cancer. But before getting into the details it's important to understand the history of vitamins in general. It all started in Southeast Asia, during the 1800s, when many people were dying from a mysterious and horrible disease called Beriberi. It involved nerve damage and heart issues, and people were dying in painful ways. But Beriberi didn't become a problem until we had the invention of better rice milling technology. The technology removed the rice husk and left behind the white rice that we still eat today. There was an outburst of this horrible disease in cultures where white rice was the staple in the diet.

People didn't understand why this was happening and we were just discovering germs and infections that were causing disease. No one was looking at what was missing from the diet because we didn't know that could be a factor. Eventually, a doctor named Christiaan Eijkman realized that brown rice had the "anti-beriberi factor." He later discovered that white rice was missing something and it was causing Beriberi. Today this missing substance is known as Vitamin B1 or thiamine.

It wasn't until the early 1900s that many vitamin chemical structures were even identified in a lab. A Polish biochemist name Casimir Funk wanted to give these mysterious substances a name. He choose the Latin word for life, which is vita, and then he choose the word amin or amine, which is the chemical structure that he thought all of these substances were going to share. And then he combined the two words together to form vitamine, which we now know as vitamin.

You may have wondered why vitamins are named with what seem like random letters and numbers. For example, there are eight B vitamins in total (vitamin B1, B2, B3, B5, B6, B7, B9, B12) but there isn't a vitamin B4, B8, B10, or B11. During the naming process there were substances labeled as vitamins, only later to find they were not, so those names were taken out. You may also notice that vitamin B17 is not listed here as a vitamin.

So what exactly is a vitamin?

Merriam Webster defines it as any various organic substances that are essential in minute

quantities to the nutrition of most animals and some plants and are present in natural foodstuffs or sometimes produced within the body.

According to the Committee on Nomenclature of the American Institute of Nutrition Vitamins, vitamin B17 is not a vitamin because it doesn't fit the scientific definition of a vitamin in that it is not essential for reaching or sustaining good health. So if vitamin B17 doesn't meet the definition of a vitamin, then what is it? Its common name is amygdalin, which is a chemical compound found in some foods. It's present naturally in the pits or seeds of stone fruits such as apricots, apples, peaches, plums, or in bitter almonds. The kernels are removed from the fruit, cracked open, and then dried in the sun or in ovens. The kernels are then boiled in ethanol and the amygdalin is precipitated in minute white crystals.

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So where did the use of amygdalin begin?

Amygdalin was initially isolated from bitter almonds in the 1830s by French chemists and shortly

thereafter, a Russian doctor first used amygdalin as a cancer treatment in 1845. The first case treated reportedly had a positive outcome. But it wasn't until the 1920s that the first recorded use of it was in the United States. A California physician named Ernst T. Krebs Sr. He started using the substance in pill form to treat his cancer patients—but the substance was found to be too toxic and was quickly abandoned.

From amygdalin to laetrile

In 1949, Ernst T. Krebs Sr. and his son Ernst T. Krebs Jr., started working closely together. Krebs Jr. is often referred to as "Dr." Krebs, but he does not hold a doctoral degree from an accredited university. In 1973 after giving a one hour lecture on laetrile, he obtained a "Doctor of Science" degree from a religious college with no science department and the university lacked the authority to grant any doctoral degrees. Initially Krebs Jr. attended medical school and was expelled after repeating his freshman year and failing his sophomore year. He took courses at 5 different colleges and always had low or failing grades in his science courses, until he finally received a Bachelor's of Arts degree from the University of IL.

Together the Krebs' eventually created a semi-synthetic version of amygdalin, that was less toxic, and named this final product laetrile. During this process, there were several versions of laetrile developed and published however. Then finally IV laetrile was born and patented in 1961.

As a result of technology advancement, vitamin B17 can now be delivered by IV injection, tablets, and it is also an ingredient in "anti-cancer enemas" and skin creams. Laetrile cancer treatments can include a specified diet, high doses of vitamins, and weeks of injections followed by maintenance pills. The usual preferred commercial source is from apricot kernels however.

Metabolism and side effects

Krebs Jr. claimed that cancer tissues are rich in an enzyme that causes amygdalin to release cyanide, which destroys cancer cells. According to this theory, noncancerous tissues are protected from this by another enzyme which renders the cyanide harmless.

However, amygdalin and laetrile are both digested in the duodenum (part of the small intestine) and forms hydrogen cyanide, and in sufficient quantities causes cyanide poisoning. After being on the market some people were suffered from cyanide toxicity when ingested by mouth. Cyanide poisoning can cause your blood pressure to drop very low, damage your liver, and may result in a coma. In the worst case scenario high doses of 50-60 apricot kernels or 50 grams of laetrile can kill you. Symptoms include dizziness, queasiness, vomiting, headache, blue skin, a droopy upper eyelid, trouble walking, confusion, fever, can cause a lack of oxygen to the body tissues, and nerve damage.

The European Food Safety Agency Panel on Contaminants report that if consumers follow the recommendations on websites promoting consumption of apricot kernels, their exposure to cyanide will greatly exceed the dose expected to be toxic. The panel also reports that acute cyanide toxicity has occurred in adults who consumed 20 or more kernels and 5 or more in kids.

The crackdown of laetrile and the laetrile movement—The Forbidden Fruit

After discoveringlaetrile's toxic effects, it led to a number of deaths and the Food Drug Administration (FDA) and American Medical Association cracked down in the 1970s as a result. A laetrile movement began and got a huge lift when a medical writer at Sloan Kettering Hospital, Ralph Moss, PhD, publicly alleged a coverup and "leaked data" that claimed laetrile had potential as an anti-cancer treatment. This led to big media sensation—despite the fact that no scientist could reproduce these claims in a series of studies. It's also important to note that Dr. Moss actually has a Ph.D in classics (not science or medicine) and is now one of the leading advocates for laetrile, along with snake oil salesman Joseph Mercola, DO.

In response to pressure from pro-laetrile groups during the 1970s, the National Cancer Institute (NCI) conducted a retrospective review, published in 1978 of people who had been treated with laetrile for their cancer. They did this by obtaining information via mail from 385,000 physicians and 70,000 other health professionals known to treat patients with laetrile, as well as by getting information directly from members of pro-laetrile groups. Of all the cases only 6 could be described as "producing a response."

After this research was conducted, a US senator concluded that laetrile leaders were "slick salesmen who would offer a false sense of hope to cancer patients." Then the FDA sanctioned against the sale, use, and transportation into the US of products labeled as laetrile or amygdalin. The US Department of Agriculture prohibited the shipment of these products in 1977.

The laetrile promoters portrayed themselves as "the little guys struggling against the big government," and supporters claimed that the Food and Drug Administration, American Medical Association, National Cancer Institute, American Cancer Society, major oil companies, and drug companies all had conspired against laetrile. This escalated the demand and increased prices on the black market. The view of a government coverup also created media sensation, and it has left a mark that still resonates today.

Both of the Krebs' then promoted and rebranded as laetrile with the misnomer "vitamin B17" as a result of enforcement agencies banning it as a drug. The Krebs' claimed it was a vitamin to have it classified as a nutrition supplement (rather than as a pharmaceutical drug) in order to be subjected to less regulations. Krebs Jr. also theorized that cancer was caused by a deficiency in "vitamin B17" and now many proponents claim that it not only cures cancer, but it can also prevent cancer.

Photo by Charles Deluvio on Unsplash

What does the rest of the scientific research find?

Overall animal and lab studies of amygdalin have mixed results. Several found no benefit, while others suggest the chemical had a slight effect on certain kinds of cancer cells. One animal study claimed that amygdalin slowed the growth of cancer in animals and helped stop tumors from spreading to the lungs. But repeated studies could not show similar results.

In 1977 a controlled, blinded trial, laetrile showed no more activity than placebo. Subsequently, laetrile was tested on 14 tumor types without evidence of effectiveness. In one study only looking at 6 people to test what levels of laetrile were safe, 2 people developed symptoms of cyanide poisoning because they ate raw almonds while taking amygdalin. A second study in 1982, looked at whether laetrile could shrink cancer in 178 people and only 1 person had any apparent response to laetrile. However, within 7 months, all cancers had continued to grow. But as time progressed the results were clear cut—not one person was cured or even stabilized their cancer. The median survival rate for laetrile was 4.8 months from the start of therapy and in those still alive after 7 months, the tumor sizes had increased. This was the expected result for patients receiving no treatment at all. In addition, several patients experienced symptoms of cyanide toxicity or had blood levels of cyanide approaching the lethal range.

The National Cancer Institute has reviewed the use of laetrile for cancer in people on their website. They sponsored 2 published studies in the late 1970s and early ’80s. Some scientists have tested

laetrile in more than 20 animal tumor modes, as well as in humans, and found no benefits either alone or together with other substances.

More recently, in 2015, the Cochrane Library published a systematic review. It found that the claimed benefits of laetrile are not supported by controlled clinical trials. It also found a risk of serious side effects from cyanide poisoning. The authors from this study conclude that on ethical and scientific grounds, that no further clinical research on this topic should be conducted.

Current market and take-home message

There is no evidence to support that vitamin B17 acts like a vitamin in your body or that you actually need any form of it. Despite that these dangerous claims still make their way onto the internet's most popular "natural health blogs" and continue to fuel conspiracies. This has resulted in many providing personal testimonials of those who were cured of their cancer or citing studies that are not significant for human outcomes. For example, the weight of all this evidence has not deterred earlier mentioned natural health evangelists like Joseph Mercola. In 2014 he posted at least five studies which he says demonstrates effectiveness of laetrile and he even has a petition on his website for Sloan Kettering to acknowledge the positive results about laetrile from the 1970s. None of these studies were based on human trials or data generated by the compounds of actual clinical use—they were either cell lines or studies based on lab animals. This doesn't always translate the same results in humans as demonstrated in the large scale clinical trials, retrospective reviews, and meta-reviews mentioned above. But one of the most prominent force keeping the vitamin B17 myth alive is the book "World without cancer. The story of vitamin B17." This book was positively reviewed by Ernst Krebs Jr. himself and by an activist without any medical training.

Today few sources of laetrile are available within the US and it's still used in some Mexican clinics where it's marketed as amygdalin or "vitamin B17." Preparations may not only come from questionable sources, but they may also be contaminated.

Unfortunately this is not a hidden miracle cure all and ultimately, it is an unproven treatment that could hurt you. Anyone telling you otherwise is either misinformed or trying to sell you something. It's best to stick with treatments that are supported by evidence to prevent harm, save you money, time, and energy on disproven treatments. It's tempting to try natural treatments and I can see the allure. If your main concern is avoiding synthetic or unnatural drugs in the place of natural therapies, I recommend you read this prior blog post where I write extensively on the topic. Ultimately the decision is yours to make and your comfort level, but it's good to have the evidence.

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