

# Red Flags and Free Speech

Books and websites promoting unproven “cures” for cancer are abundant, protected we suppose by **“free speech.”** Tragically, the belief in such claims can lead to the avoidance or delay in receiving effective treatment, proven in clinical trials.

We are most vulnerable when the claim tells us what we want and dearly wish to be true.

Being smart will not protect you from such claims (Steve Jobs). Conspiracy theories may seem compelling to anyone lacking background in the field ... most of us, when first diagnosed with a cancer!

## Conspiracy Theories – hiding cures?

3 in 5 adults will develop a serious cancer. Some types of cancer are cured today. A worldwide conspiracy to hide cures would have to be kept when each scientist’s child, spouse, or dear friend gets cancer. Competing drug companies would have to deceive shareholders and intentionally undermine the products they test and submit to FDA for approval.

## Natural is better?

Toxins and medicines can be man-made or derived from natural sources – from plants and animals. Vincristine and Etoposide are

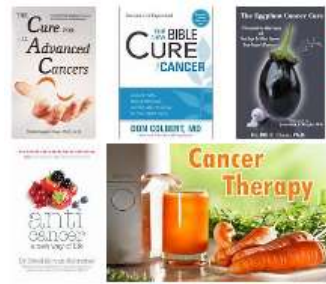
examples of cancer drugs derived from plants.

The molecular structure of a compound will be identical whether it’s made by a plant or synthesized by a man.

How a compound is derived will not alter its bioavailability, its affinity to the target, the importance of the target, or its good and bad effects.

For cancer drugs what counts is the affinity of the compound to the disease process. Does it bind well to the abnormal pathway ... like a key fits a lock? What are the off-target effects? What’s the optimal dose and schedule?

*Cures for cancer that are free of side effects – natural and food-based, kept from us by doctors and the drug industry, “supported” by science, “proven” by testimonials.*



*While eating well and regular exercise will not cure or treat cancer, these CAN improve your general health and quality of life, providing indirect benefits associated with improved survival*

## Recognizing junk science

Theories promoted to self-treat cancer are often hijacked from the medical literature then applied prematurely or distorted ... often from preclinical studies: cell culture and animal experiments.

## Cell culture experiments

- Cannot account for the dose that's needed to have a similar effect on cancer cells in the body
- Cannot tell us if the compound is absorbed into the blood when taken orally... or if it’s merely excreted
- Cannot inform about the side effects of the compound when given at the dose showing activity in the test tube (Is it feasible or safe to take that much of it?)

Even if active against disease ... the compound given at the wrong dose can do harm:

- Tumor cells can adapt to low or subclinical doses of treatment compounds – leading to resistance.

Cancer cells in a test tube are very poor models for the treatment of cancer cells in the body.

- Unlike bacteria, many kinds of tumor cells are challenging to keep alive in cell culture medium.

## Animal experiments:

- Cannot account for the differences between the mouse and human host environment. The mouse immune system is different. The tumor cell line is different from cancers that emerge in humans.
- The toxicities and activity of the compound in the mouse rarely predict what happens in humans.

## What is Cancer? Is it treatable with diet, or other life style changes ...

What is plausible as a treatment depends on the nature of the disease. Diabetes can be managed with a change in diet, but, unfortunately, not cancer due to the underlying cause of it.

### The beginnings of cancer:

In any cell the genetic code can get damaged (called mutations) so that the instructions in the DNA "manual" are altered in ways that make abnormal types and amounts of proteins that drive the malignant behavior of the cells. ... Instead of resting, cancer cells continue dividing; instead of dying the cells stay alive. Mutations may also turn off genes that can repair damaged DNA, or that can induce cell death when mutations in the cell are detected. The mutations that lead to cancer are numerous and are often unique to each type of cancer.

Cancer treatments work by targeting differences in these cells. Chemotherapy, for example, acts by damaging rapidly dividing cells – inducing cancer cells to die. Other kinds of drugs work by binding to the driving pathways in the cancer cells that are needed for the cancer cells to grow or persist. Immunotherapies work by fostering immune recognition of tumor cells, or by blocking what blocks immune rejection of the tumor cells.

## Observations and testimonials are not reliable

*"For centuries doctors used leeches and lancets to relieve patients of their blood. They KNEW bloodletting worked. EVERYBODY said it did. When you had a fever and the doctor bled you, you got better. EVERYONE knew of a friend or relative who had been at death's door until bloodletting cured him. Doctors could recount thousands of successful cases."*

Today we know that patients did well in spite of bloodletting, a practice based on primitive notions about the nature of diseases - attributed to bad elements in the blood. The lesson from history is that observations are not reliable as evidence.

In any observation or case report, even when from a reputable source, you can't tell what would have happened if something else – or nothing was done; from observation you can't know if others are likely to be helped or harmed by the same approach.

*In modern clinical research the number of participants in a study is pre-specified and assessments are made in the same way. One approach is compared to another in late phase testing – the patients assigned to study groups randomly. In all clinical studies you have a predefined denominator (the number of participants) that informs about the rate of good and bad effects - what others may expect ... and how it compares to another established treatment.*

Testimonials have all of the limitations of observations ... with much less certainty about the facts:

Did the person really have the medical condition? Was it a false diagnosis of a cancer? You don't know how the outcome was measured: Was it that the patient felt better? What tests were used to

measure it? Did the benefit last a week or 2 months? You can't know what other medical treatments were given shortly before or after. Finally, people who provide testimonials and later die or get very sick cannot provide updates on their status.

## Red flags for medical claims

- It cures **ALL cancers** (as if it was one disease) and other diseases.
  - It's **natural**; has **no side effects**.
  - A **conspiracy** explains why it isn't prescribed by your doctor
  - It's only available in a country that lacks medical regulations.
  - You can **buy it online** - without a doctor's prescription.
  - There's only **one group** or person promoting it.
  - The evidence is **based on test tube / animal experiments**
- The claim has **not been tested in people** – in an adequately sized or controlled clinical trial.
- It is said to "**boost the immune system**" (without defining this or providing clinical evidence showing this is effective)
  - It **relies on testimonials**

*Patients Against Lymphoma  
evidence-based information, independent  
of health industry funding  
[www.lymphomation.org](http://www.lymphomation.org)*