

The Latest Weapon in the War on Cancer: Honey Bees

By Dr. Mercola

Propolis, the "caulk" honeybees use to patch holes in their hives, has been used as a natural remedy since ancient times, treating ills ranging from sore throats and burns to allergies.

New research has revealed another exciting use for this seemingly miraculous substance, this time in the fight against cancer.

Propolis Slows Tumor Growth

Propolis has a number of well-known therapeutic properties, including potent antioxidant and anti-microbial action, and healing, analgesic, anesthetic, and anti-inflammatory properties. In the hive, bees use it as a disinfectant against bacteria and viruses, helping to seal cracks and "embalm" invaders that are too large to carry out.

It's been used for thousands of years in folk medicine, but despite its plethora of active components, research on this compound, and therefore its modern medical uses, is limited.

Researchers from the University of Chicago Medical Center, intrigued by propolis' anti-cancer potential, decided to look at one of its bioactive components, caffeic acid phenethyl ester (CAPE), and its impact on human prostate cancer cells.

In cells grown in a lab, even small doses of CAPE slowed the growth of tumor cells. And when low oral doses were given to mice with prostate tumors, tumor growth slowed by 50 percent! What's more, feeding CAPE to mice daily caused the tumors to stop growing, although they returned when the CAPE was removed from their diets.

This suggests the propolis compound works by impacting signaling networks that control cancerous cell growth, rather than by killing the cells directly. However, there are at least four studies on propolis' apoptotic properties, indicating that technically it is capable of directly killing cancer cells, including prostate cancer, melanoma and more, as well.

This is not the first time propolis has shown promise in treating cancer. In 2009, propolis was found to suppress the growth of neurofibromatosis-associated tumors (tumors on nerve tissue) by blocking PAK1 signaling. Researchers noted:

"Since more than 70% of human cancers such as breast and prostate cancers require the kinase PAK1 for their growth, it is quite possible that GPE [green propolis extract] could be potentially useful for the treatment of these cancers, as is Bio 30 [a CAPE-based propolis extract]."

Propolis Has Powerful Immune-Modulating, Anti-Inflammatory Properties

What makes natural compounds so exciting, and often so powerful, is that they don't simply exhibit *one* therapeutic action the way, say, most drugs work. Instead, they contain numerous bioactive components that may exert dozens of beneficial actions within your body. This appears to be the case with propolis, which has been found to play a role in over 80 conditions, including:³

Inflammation	Ulcers	Radiation damage
Herpes	Warts	Periodontitis
Ear infections	Respiratory tract infections	Flu
Cataracts	Oxidative stress	Staph infection

Writing in *Clinical Reviews in Allergy and Immunology*, researchers expanded on some of propolis' potential effects:⁴

"Propolis, a waxy substance produced by the honeybee, has been adopted as a form of folk medicine since ancient times. It has a wide spectrum of alleged applications including potential anti-infection and anticancer effects. Many of the therapeutic effects can be attributed to its immunomodulatory functions. The composition of propolis can vary according to the geographic locations from where the bees obtained the ingredients.

Two main immunopotent chemicals have been identified as caffeic acid phenethyl ester (CAPE) and artemillin C. Propolis, CAPE, and artemillin C have been shown to exert summative immunosuppressive function on T lymphocyte subsets but paradoxically activate macrophage function.

On the other hand, they also have potential antitumor properties by different postulated mechanisms such as suppressing cancer cells proliferation via its anti-inflammatory effects; decreasing the cancer stem cell populations; blocking specific oncogene signaling pathways; exerting antiangiogenic effects; and modulating the tumor microenvironment.

The good bioavailability by the oral route and good historical safety profile makes propolis an ideal adjuvant agent for future immunomodulatory or anticancer regimens."

Other Natural Remedies Also Show Cancer Promise

One of the reasons why conventional cancer treatment is such a dismal failure in the United States is because it relies on chemotherapy. Chemotherapy drugs are, by their very nature, extremely toxic and typically work against your body's natural ability to fight cancer, e.g. destroying host immunity instead of supporting it.

One of the biggest drawbacks to chemotherapy is the fact that it destroys healthy cells throughout your body right along with cancer cells, a "side effect" that often leads to accelerated death, not healing.

Another devastating side effect of chemotherapy is the way it actually supports the more chemo-resistant and malignant cell subpopulations within tumors (e.g. cancer stem cells), both killing the more benign cells and/or quiescent cells within the tumor that keep it slow-growing, or even harmless.

As a result, this unleashes a more aggressive, treatment-resistant type of cancer to wreak havoc on your body.

Like propolis, a handful of natural compounds have been discovered that show promise for treating cancer without such toxic effects. Some of these even exhibit an effect called "selective cytotoxicity," which means they are able to kill cancer cells while leaving healthy cells and tissue unharmed, and even benefited one such compound is bromelain, an enzyme that can be extracted from pineapple stems. Research published in the journal *Planta Medica* found that bromelain was superior to the chemotherapy drug 5-fluorouracil in treating cancer in an animal study.

Researchers stated:

"This antitumoral effect [of bromelain] was superior to that of 5-FU [5-fluorouracil], whose survival index was approximately 263 %, relative to the untreated control."

What makes this impact particularly impressive is that the bromelain worked without causing additional harm to the animals. The chemo drug 5-fluorouracil, on the other hand, has a relatively unsuccessful and dangerous track record despite being used for nearly 40 years. Selective cytotoxicity is indeed a property that is only found among natural compounds; no chemotherapy drug yet developed is capable of this effect. Aside from bromelain, other examples of natural compounds that have been found to kill cancer cells without harming healthy cells include:

- **Vitamin C:** Dr. Ronald Hunninghake carried out a 15-year research project called RECNAc (cancer spelled backwards). His groundbreaking research in cell cultures showed that vitamin C was selectively cytotoxic against cancer cells.
- **Eggplant extract:** Solasodine rhamnosyl glycosides (BEC), which are a class of compounds extracted from plants of the Solanaceae family, such as eggplant, tomato, potato, Bell peppers, and tobacco, also impact only cancerous cells leaving normal cells alone. Eggplant extract cream appears to be particularly useful in treating skin cancer. Dr. Bill E. Cham, a leading researcher in this area, explains:

"The mode of action of SRGs [glycoalkaloids solasodine rhamnosyl glycosides (BEC)] is unlike any current antineoplastic [anti-tumor] agent. Specific receptors for the SRGs present only on cancer cells but not normal cells are the first step of events that lead to apoptosis in cancer cells only, and this may explain why during treatment the cancer cells were being eliminated and normal cells were replacing the killed cancer cells with no scar tissue being formed."

- **Turmeric (Curcumin Extract):** Of all the natural cancer fighters out there, this spice has been the most intensely researched for exhibiting selective cytotoxicity. Remarkably, in a 2011 study published in the *Journal of Nutritional Biochemistry*, rats administered curcumin, the primary polyphenol in turmeric, saw a decrease in experimentally-induced brain tumors in 9 out of 11 treated, while noting that the curcumin did not affect the viability of brain cells "suggesting that curcumin selectively targets the transformed [cancerous] cells."

Natural Strategies for Cancer Prevention

When it comes to cancer and other chronic diseases, effective prevention trumps progressive treatments in my eyes. I believe you can virtually eliminate your risk of ever developing cancer (and radically improve your chances of recovering from cancer if you currently have it) by following some relatively simple risk reduction strategies—all of which help promote a healthful biological environment in which your cells can thrive and combat disease naturally.

- Optimize your vitamin D levels.
- Reduce or eliminate your processed food, fructose and grain carbohydrate intake.
- Control your fasting insulin and leptin levels. Normalizing your insulin levels is one of the most powerful physical actions you can take to lower your risk of cancer, and improved insulin and leptin control is the natural outcome of reducing or eliminating fructose, grains, and processed foods from your diet.
- Normalize your ratio of omega-3 to omega-6 fats by taking a high-quality krill oil and reducing your intake of most processed vegetable oils.
- Get regular exercise. One of the primary ways exercise lowers your risk for cancer is by reducing elevated insulin levels, which creates a low sugar environment that discourages the growth and spread of cancer cells, which thrive on sugar-based metabolism (anaerobic glycolysis). Controlling insulin levels is one of the most powerful ways to reduce your cancer risks. Additionally, exercise improves the circulation of immune cells in your blood. Your immune system is your

first line of defence against everything from minor illnesses like a cold right up to devastating, life-threatening diseases like cancer.

The trick about exercise, though, understands how to use it as a precise tool. This ensures you are getting enough to achieve the benefit, not too much to cause injury, and the right variety to balance your entire physical structure and maintain strength and flexibility, and aerobic and anaerobic fitness levels. If you have limited time, high-intensity Peak Fitness exercises are your best bet but ideally you should have a good strength-training program as well.

- Get regular, good-quality sleep.
- Reduce your exposure to environmental toxins like pesticides, household chemical cleaners, synthetic air fresheners and air pollution.
- Limit your exposure and provide protection for yourself from EMF produced by cell phone towers, base stations, cell phones and WiFi stations. On May 31, 2011, the International Agency for Research on Cancer (IARC), an arm of the World Health Organization (WHO), declared that cell phones are "possibly carcinogenic to humans."
- Avoid frying or charbroiling your food. Boil, poach or steam your foods instead.
- Have a tool to permanently reprogram the neurological short-circuiting that can activate cancer genes. Even the CDC states that 85 percent of disease is caused by emotions. It is likely that this factor may be more important than all the other physical ones listed here, so make sure this is addressed. Energy psychology seems to be one of the best approaches and my particular favorite tool, as you may know, is the Emotional Freedom Technique (EFT).
- Eat at least one-third of your diet in the form of raw food.