

MANGOSTEEN MANIA

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(12/2006)

Bottom Line At The Top: If there were definitive answers about *Garcinia mangostana* (mangosteen) and health, this would be a short article. It's not. Naturally occurring chemicals in the rind and bark of mangosteen kill a variety of microorganisms and cancer cells on contact in test tubes. Promoters of mangosteen juice promise cures for what ails you. The benefit and safety of the internally ingested juice is unknown.

Folk medicine practitioners powder the dried rind of *Garcinia mangostana* fruit for administration to people with dysentery, diarrhea, cystitis, gonorrhea and thrush. They also incorporate the powder into an ointment used to treat skin ailments. Filipinos and Malaysians use a broth created by boiling the leaves and bark for the same types of illnesses and a root extract to regulate women's periods.

Entrepreneurs have jumped on mangosteen, creating multi-level marketing schemes to distribute mangosteen juice. They claim it cures over 200 maladies - everything from stroke to depression to cancer. Googling mangosteen yields over 1.8 million results, most heralding the wonders of juice products like Xango, Thai-Go and MangoXan. A Georgia family practitioner wrote a book about mangosteen and purports to do research, but really just reviews the 50 or so studies of bark and rind extract that have been done in other people's laboratories. True to most hyped up remedies, mangosteen fruit has some potential benefit, but it's not clear that the medicinal parts of the fruit are in the marketed juice or how much they help or harm.

Garcinia mangostana (mangosteen) is a tropical evergreen tree. It has no relation to the mango. The tree grows 20-75 feet tall and takes fifteen years to start producing only a few fruits each year. The tree dies after even a single exposure to temperature less than 40 degrees. Only one tree has ever been cultivated in the continental U.S., and it bore a single fruit and then died. Its finicky growth requirements and low yield deter mass cultivation.

The U.S. prohibits importation of the whole fruit without fumigation or irradiation, so it is generally not available. Oriental markets sell the canned, frozen or juiced pulp and millions of multi-level marketers sell a juice supplement that contains who-knows-what.

The outer shell (hull, rind, or peri-carp) is hard and contains anti-insect, anti-bacterial, anti-viral, anti-oxidant and anti-fungus substances. How smart of the plant to evolve toxins that discourage biological destroyers! Thousands of other plants contain similar substances.

Published by

HEALTHY CHOICES FOR MIND AND BODY

Written by Ann Gerhardt, MD

Scientists have isolated naturally occurring chemicals, **xanthenes**, that some think are responsible for mangosteen's anti-microbial effect. They have identified 23 different xanthenes from mangosteen rind, seed, root and bark, *but not from the juice*. Some, but not all, of the xanthenes kill bacteria, viruses and fungus on contact in test tube experiments. In lab cultures, they even work well against two of the most virulent hospital bacteria, VRE and MRSA.



A few xanthenes are toxic on contact, killing a variety of cancer cells, including breast, colon, lung, mouth and stomach in laboratory test tubes. Each cancer cell sort of blows up in a mini-explosion, by a process called apoptosis.

In test tubes xanthenes inhibit enzymes (COX) that contribute to inflammation and act as anti-oxidants. Distributors of mangosteen juice claim that it has the highest ORAC value (Oxygen Radical Absorbance Capacity) of any plant, an absurd claim since all plants have not been analyzed.

Even if true, it may not be a good thing — High doses of strong anti-oxidants can't be stored and become pro-oxidants in biological systems, a dangerous state proven for at least one of mangosteen's xanthenes.

Inside the fruit is a very sweet, fleshy pulp and up to 5 seeds. The juice tastes great (South East Asians call it the "Queen of Fruits") but has no greater health benefit than less exotic fruit juices. **Neither folk medicine does nor scientists have found a medicinal use for the juice.**

Therein lies the rub with mangosteen juices: No where, on any mangosteen website, does it say how much biologically

active rind, bark or xanthenes are in the juice. They do say they put some in, but there is no documentation that the amount present in the juice even comes close to the amount used in folk medicine powders and ointments. How much can it contain, after all, since it's a *juice*, not a mush, ointment or powder?

I've had patients who used mangosteen juice, often at the behest of relatives who were distributors. Each had chronic, waxing and waning symptoms of incurable diseases. Most believed at first that the juice helped, but eventually stopped it when they realized that the frequency, duration and intensity of their bad spells hadn't really changed.

Folk medicine docs use mangosteen's powdered bark or rind for problems amenable to treatment that makes direct contact with the problem – like thrush (tongue), dysentery (the lining of the bowel) or eczema (skin). There is no evidence, even in scientific experiments, that xanthenes are absorbed across the intestinal lining into the human body, so that they might cure non-contact maladies.

Anti-microbial compounds in mangosteen rind act like bleach or antiseptic soap: They kill on contact in nature and in the test tube. Antiseptics like bleach and Betadine also work locally, without absorption into the body. Bleach kills almost every organism on contact, but will drinking bleach help a cold? No. Such direct toxicity helps only with infections in which the antiseptic can be directly applied to the culprit organism without hurting normal tissue (much).

Is there any evidence that the currently hyped mangosteen juice is harmful? No, but no human studies have been done to determine safety. For that matter, there are no published human trials of any kind, including ones that demonstrate efficacy. XanGo (the market leader) certainly isn't going to advertise side effects. As a nutritional supplement, it isn't regulated by the government. I found one notation that one derivative of mangosteen's xanthenes raises blood pressure and dulls mental function. The major harm, at least given current information, would be that a person foregoes a proven beneficial treatment in favor of fruit juice faith.

Another major concern is that **any substance that can kill cancer cells and bacteria on contact in a test tube may just as well kill healthy cells.** One fifth of all cancer chemotherapy treatments, including vincristine, Taxol, vinblastine and etoposide, were derived from plant sources. Each of these natural chemicals kills cancer cells, but clinically beneficial doses cause toxicity because innocent bystander normal cells die also.

Mangosteen doesn't have a corner on the xanthone market. Xanthenes from bark and roots of other trees also kill tumor cells and microbes in laboratory experiments. You won't find them on supermarket shelves, however. Only G.

mangostana has entrepreneurs to market it, with claims like "mangosteen is now on an unstoppable march to conquer the world" and "See what it can do for your well-being, your finances and your dreams!"

Mangosteen distributors inflate health claims, saying there is a "wealth of independent scientific studies already done on Mangosteen... their printouts of research papers stacked up to over a foot and a half!" First, in the world of science, that's about enough to generate some interest, not definitive answers. Second, the touted research dealt with xanthenes extracted with methanol and hexane, not mangosteen juice product. **We don't even know if the benefits of mangosteen seen in folk medicine are due to xanthenes or to some other, as yet unidentified component.**

The first xanthone was isolated from *Garcinia mangostana* in 1855. Over 150 years later, only a handful of labs, most in the Orient, actively study mangosteen's xanthenes and their biological activity. There are many studies of natural medicine products that have yet to be done. Unfortunately, companies have little motivation to put money into studying naturally occurring chemicals because such substances are un-patentable: No patent, no money.

Hopefully some future do-gooder will fill this information vacuum: **Any of the plant's xanthenes may ultimately find a role as a useful and safe medication.** At the very least, maybe we'll find out if mangosteen-maniac juice has any real health benefit.

You may decide to spend \$39.99 for 25 ounces of fruit juice that may or may not help or harm. Now you know enough facts to really confuse your decision.