

## Citral in Lemongrass causes Cancer Cell Death

**Artemis writes:** *This is an excerpt from an article by Allison Kaplan Sommer in April 02, 2006. It's fascinating to read, even though it's long. It would be very interesting to see the effects of Lemongrass essential oil in this situation.....remembering that the essential oil is always much more potent than the whole food, because of how it's been concentrated. .*

A drink with as little as one gram of lemongrass contains enough Citral to prompt cancer cells to commit suicide in the test tube, according to new Israeli research. At first, Benny Zabidov, an Israeli agriculturalist who grows greenhouses full of lush spices on a pastoral farm in Kfar Yedidya in the Sharon region, couldn't understand why so many cancer patients from around the country were showing up on his doorstep asking for fresh lemongrass. It turned out that their doctors had sent them.

"They had been told to drink eight glasses of hot water with fresh lemongrass steeped in it on the days that they went for their radiation and chemotherapy treatments," Zabidov told ISRAEL21c. "And this is the place you go to in Israel for fresh lemongrass."

It all began when researchers at Ben Gurion University of the Negev discovered last year that the lemon aroma in herbs like lemongrass kills cancer cells in vitro, while leaving healthy cells unharmed. The research team was led by Dr. Rivka Ofir and Prof. Yakov Weinstein, incumbent of the Albert Katz Chair in Cell-Differentiation and Malignant Diseases, from the Department of Microbiology and Immunology at BGU.

Citral is the key component that gives the lemony aroma and taste in several herbal plants such as lemongrass (*Cymbopogon citratus*), melissa (*Melissa officinalis*) and verbena (*Verbena officinalis*). According to Ofir, the study found that Citral causes cancer cells to "commit suicide: using apoptosis, a mechanism called programmed cell death." A drink with as little as one gram of lemongrass contains enough Citral to prompt the cancer cells to commit suicide in the test tube.

The BGU investigators checked the influence of the Citral on cancerous cells by adding them to both cancerous cells and normal cells that were grown in a petri dish. The quantity added in the concentrate was equivalent to the amount contained in a cup of regular tea using one gram of lemon herbs in hot water. While the citral killed the cancerous cells, the normal cells remained unharmed.

The findings were published in the scientific journal *Planta Medica*, which highlights research on alternative and herbal remedies. Shortly afterwards, the discovery was featured in the popular Israeli press. Why does it work? Nobody knows for certain, but the BGU scientists have a theory.

"In each cell in our body, there is a genetic program which causes programmed cell death. When something goes wrong, the cells divide with no control and become cancer cells. In normal cells, when the cell discovers that the control system is not operating correctly - for example, when it recognizes that a cell contains faulty genetic material following cell division - it triggers cell death," explains Weinstein. "This research may explain the medical benefit of these herbs."

The success of their research led them to the conclusion that herbs containing Citral may be consumed as a preventative measure against certain cancerous cells.

As they learned of the BGU findings in the press, many physicians in Israel began to believe that while the research certainly needed to be explored further, in the meantime it would be advisable for their patients, who were looking for any possible tool to fight their condition, to try to harness the cancer-destroying properties of Citral.

That's why Zabidov's farm - the only major grower of fresh lemongrass in Israel - has become a pilgrimage destination for these patients. Luckily, they found themselves in sympathetic hands. Zabidov greets visitors with a large kettle of aromatic lemongrass tea, a plate of cookies, and a supportive attitude.

"My father died of cancer, and my wife's sister died young because of cancer," said Zabidov. "So I understand what they are dealing with. And I may not know anything about medicine, but I'm a good listener. And so they tell me about their expensive painful treatments and what they've been through. I would never tell them to stop being treated, but it's great that they are exploring alternatives and drinking the lemon grass tea as well.".....

He also felt a responsibility to know what to tell his customers about its use. "When I realized what was happening, I picked up the phone and called Dr. Weinstein at Ben-Gurion University, because these people were asking me exactly the best way to consume the Citral. He said to put the loose grass in hot water, and drink about eight glasses each day." Zabidov is pleased by the findings, not simply because it means business for his farm, but

because it might influence his own health. Even before the news of its benefits were demonstrated, he and his family had been drinking lemongrass in hot water for years, "just because it tastes good."  
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