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UW gives us another reason to love our lattes**Caffeine just might help fight skin cancer, new research shows**

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P-I REPORTER

Seattle's love affair with coffee has not so far extended to rubbing it all over our bodies.

Maybe it should.

For some years, studies have hinted at the possibility that caffeine can reduce the risk of some cancers. Now, new work by scientists at the University of Washington and Rutgers University may have unlocked the biochemical secrets behind caffeine's cancer-fighting ability. Rutgers studies have shown that caffeine applied to the skin reverses ultraviolet-induced damage and reduces skin cancer.

"Maybe caffeine belongs in sunscreen lotions," said Dr. Paul Nghiem, a skin cancer expert at the University of Washington and Fred Hutchinson Cancer Research Center.

"To the best of my knowledge, this is the first time anyone has shown that you can inhibit the ultraviolet damage to cells after the damage has been done," said Dr. Allan Conney, Nghiem's collaborator on the caffeine-cancer studies and director of the Rutgers University Laboratory for Cancer Research.

The findings are still preliminary and largely limited to mice, both scientists emphasized, but the basic biochemical evidence that caffeine can prevent some forms of skin cancer is fairly convincing. While human studies are only starting, the researchers have shown the basic biochemistry is the same in human cells.

The discovery took place, as often happens in science, by accident.


"We started on this by looking first for the effects of green tea on skin cancer," said Conney.

That was more than a decade ago, he said, and was preceded by epidemiological studies indicating that people who drank tea or coffee had lower rates of some cancers.

Conney said his team started looking for this special chemical in the tea, perhaps an antioxidant, perhaps something else, that appeared to be preventing cancer in some people.

Nghiem, an Olympia native who was at the time doing research at Harvard University, had been looking into how cells replicate -- specifically how, when the "cell cycle" goes haywire, this turns into cancer. He was especially interested in skin cancer.



 Karen Ducey / P-I

Dr. Paul Nghiem, a skin cancer expert at the UW and Fred Hutchinson Cancer Research Center, has been studying how caffeine protects skin cells and mice from developing cancer.

"There's more skin cancer out there than any other form of cancer," Nghiem said.

The skin, the body's largest organ, he said, somehow retains a "memory" of sun exposure and damage that decades later can turn into cancer.

"We don't really understand that memory though we believe it involves the DNA in the cells," Nghiem said.

While at Harvard, he and his colleagues began focusing on a key protein governing DNA replication in all cells, known as ATR. They published a 2001 report in the Proceedings of the National Academy of Sciences suggesting ATR could be a good target for cancer therapy.

In the same journal about a year later, Nghiem read a report from Conney and his colleagues saying that applying caffeine to the skin of mice reduced skin cancer rates by 72 percent. The Rutgers team had by then discovered it was the caffeine, not some exotic herbal antioxidant, in the tea that fought cancer.

"We had switched at one point to a decaffeinated tea and it didn't work," Conney said.

They still didn't know how the caffeine was preventing skin cancer (in this case squamous cell carcinoma), but it clearly was the caffeine.

When Nghiem read Conney's report, he already knew caffeine "messes with" DNA replication and also chemically interacts with the ATR protein. So Nghiem called Conney up.

"I told him I thought I had a potential mechanism that explains this," he said.

Nghiem, Conney and their colleagues have since teamed up to publish other reports in support of this notion that caffeine can be used to prevent skin cancer. Another report, further explaining the basic biochemistry, is due out in April in the journal Cancer Research.

Rutgers University has even applied for a patent based on Conney's work -- on a chemical "complex" that combines caffeine with a common soft-drink additive known as sodium benzoate because it appears to boost the cancer-preventive abilities of caffeine alone.

"I don't know if we have the patent or not," Conney said.

Nghiem, who is not on the patent application, said he couldn't care less about the commercial potential here.

"The evidence for this is pretty strong, and it's scientifically exciting," Nghiem said. "I don't expect to make any money off this."

Conney said they are starting to enroll people for human clinical testing and hope to enlist volunteers with genetic conditions that put them at higher risk for skin cancer.

The research, he said, indicates caffeine not only repairs existing sun damage in skin cells, but the chemical that gives us our morning buzz also appears to reduce UV absorption in the skin.

So why not just put caffeine in our sunscreens now? Why wait for another decade of expensive, highly regulated clinical studies just to see if pouring coffee or tea on our skin protects us from skin cancer?

"Well, we still don't know if it will work in people," Nghiem said.

That hasn't stopped the cosmetics industry from including it in any number of skin creams for a variety of reasons, none apparently related to cancer at this point.

Both Nghiem and Conney said clinical studies are needed to show that as it goes for the mice, so it will go for people. Conney added that there is always the risk for unanticipated side effects as well.

And what kind of beverages do these scientists drink?

"I drink lots of green tea," said Nghiem.

"I drink both coffee and green tea," Conney said.

DECAF OR REGULAR?

Research has found it's the caffeine in green tea, not some exotic herbal antioxidant, that helps fight cancer in mice. "We had switched at one point to a decaffeinated tea and it didn't work," says Dr. Allan Conney, director of the Rutgers University Laboratory for Cancer Research.

72%

The rate by which skin cancer rates were reduced after applying caffeine to the skin of mice in Conney's study.

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