

# Tick saliva could hold cancer cure: Brazilian scientists

August 28 2009, by Marc Burleigh

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Adult deer tick, *Ixodes scapularis*. Image: Wikimedia Commons.

It may be one of nature's repulsive little blood-sucking parasites, but the humble tick could yield a future cure for cancers of the skin, liver and pancreas, Brazilian researchers have discovered.

They have identified a protein in the saliva of a common South American tick, *Amblyomma cajennense*, that apparently reduces and can even eradicate cancerous cells while leaving healthy cells alone.

"This is a radical innovation," said Ana Marisa Chudzinski-Tavassi, the molecular biologist at the Instituto Butantan in Sao Paulo who is leading

the research.

"The component of the saliva of this tick... could be the cure for cancer," she told AFP.

She said she stumbled on the properties of the protein, called Factor X active, while testing the anti-coagulant properties of the tick's saliva -- the way it stops blood thickening and clotting so the tick can keep gorging itself on its host.

The protein shares some characteristics with a common anti-coagulant called TFPI (Tissue Factor Pathway Inhibitor), specifically a Kunitz-type inhibitor which also has been shown to interfere with cell growth.

A theory that the protein might have an effect on [cancerous cells](#) led to laboratory tests on cell cultures -- which exceeded all expectations.

"To our surprise it didn't kill normal cells, which were also tested," Chudzinski-Tavassi said. "But it did kill the tumorous cells that were being analyzed."

In her modest lab in the institute, housed in a rundown building, a line of immobile bloated ticks could be seen lined up with straws under their heads.

The small amounts of [saliva](#) captured that way was reproduced many times over in yeast vats so that tests could be carried out on lab rats with cancer.

The results have been more than promising.

"If I treat every day for 14 days an animal's [tumor](#), a small tumor, this tumor doesn't develop -- it even regresses. The tumor mass shrinks. If I

treat for 42 days, you totally eliminate the tumor," the scientist said.

Producing a medicine from the find, though, will require years of clinical tests and a significant financial investment -- neither of which Brazil is geared to provide.

Chudzinski-Tavassi has applied for a patent on the tick [protein](#), and is presenting her team's discovery in medical journals and conferences around the world.

But she says moving beyond her lab "proof of concept" will be frustratingly difficult.

"To discover this is one thing. To turn it into a medicine is a whole other thing entirely," she said.

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Citation: Tick saliva could hold cancer cure: Brazilian scientists (2009, August 28) retrieved 25 April 2024 from <https://medicalxpress.com/news/2009-08-saliva-cancer-brazilian-scientists.html>

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