Researchers connect a specific protein to head and neck cancers

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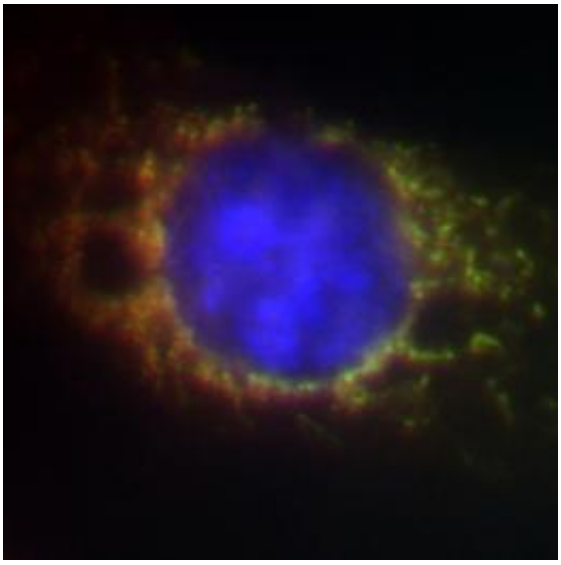

Oral squamous cell carcinoma expressing the protein SIRT3 is green, the nucleus is blue and the mitochondria are red.

(PhysOrg.com) -- The discovery that a certain protein is over-expressed in patients with oral cancer may give new treatment hope to people suffering from the particularly aggressive, localized forms of head and neck cancer.

Researchers at the University of Michigan School of Dentistry found that when they inhibited the expression of that protein, called SIRT3 or Sirtuin-3, in oral cancer cells in a petri dish, the cells did not proliferate

and more of them died.

Further, when researchers suppressed the protein in the cancer cells and combined that with radiation or chemotherapy treatment, the prohibitive effect on cancer cells was even greater, said Yvonne Kapila, associate professor of dentistry and lead author of the study.

Mice that were injected with SIRT3-inhibited oral cancer cells had about a 75 percent reduction in tumors compared to the mice injected with regular oral cancer cells, said Kapila, whose research team began looking at the Sirtuin group of proteins because some studies suggest they are key regulators for cell integrity and survival.

"We thought that maybe cancer cells, because they are very crafty, may also use one of these proteins to their advantage to extend their own survival," Kapila said. "With oral cancer, often the problem is the difficulty of early detection, thus when diagnosed at a late stage the cancer becomes very aggressive. If one can find a way to tailor treatments to those aggressive situations obviously you have a far better case of survival."

She added that oral cancer survival rates haven't changed in decades, so there's a great desire in the scientific community to find more effective treatments.

Oral cancer is the eighth most common cancer worldwide, and oral squamous cell carcinoma accounts for 90 percent of all malignancies. The five-year survival rate for patients with oral squamous cell carcinoma is 34 percent to 62.9 percent, according to the study.

Kapila said some research has shown that SIRT1 and SIRT3 proteins may suppress, rather than support, tumor growth, so it's important to remember that each case is different.

"If people do find that in breast cancer it's a suppressor and we go in and treat patients with an additional suppression of SIRT3, we may do more harm than good," Kapila said.

Kapila stressed that the results are very preliminary.

"This is very much still in the lab," she said. "We are nowhere near having any kind of treatment at this point."

The next step is to look at the SIRT3 in larger animals and then proceed to human trials.

Provided by University of Michigan