

DCA testing gets approved

Facing a lack of funding, an innovative and potentially groundbreaking new technique for treating cancer is entering preliminary human trials at the U of A

CAROLINE LEE
News Writer

Dr Evangelos Michelakis and his research team at the University of Alberta may hold the key to effective cancer treatment with the discovery of an innovative application of dichloroacetate (DCA), a generic drug traditionally used to treat metabolic and cardiovascular diseases.

"Cancer cells have a very different way of generating energy with very different mitochondria," Michelakis explained. "So, it looks like DCA only targets mitochondria that have been remodeled, while leaving normal mitochondria unaffected."

As published in the January 2007 edition of *Cancer Cell*, trials conducted on rats have indicated that DCA is capable of shrinking tumours without harming healthy, non-cancerous cells.

However, the applicability of these results to human cancer cells remains unknown. Human clinical trials are scheduled to begin immediately, as researchers now have sufficient funds to conduct their first trial—Phase II of a two-part clinical trial protocol—and have received approval from the local ethics committee and Health Canada. Phase I will involve a wider range of patients diagnosed with other forms of cancer to determine the maximal dosage of DCA that can be tolerated by an individual, but has yet to secure enough funding and is still awaiting approval from Health Canada.

According to Linda Webster, the manager of the DCA research project, two patients have already been enrolled in the trial, following a mass reaction from cancer patients hoping to be among the study's first 50 participants.

"We have had a huge response from all over the world, literally. I would say that we received over 1000 emails in the last couple of weeks and 800–900 phone calls that we have emptied off the DCA phone line," Webster said.

However, only patients from the Edmonton area are currently

being accepted due to limited funding and strict follow-up measures. Furthermore, eligibility is limited to patients with advanced brain cancer, including glioblastoma. Patients with such a condition have the worst prognoses among all cancers, as complete regression usually occurs within one to five years.

"If we start somewhere, we start with the most desperate ones. In the case that DCA works, you save a few more lives," Michelakis explained.

Strict requirements have forced Webster to turn down numerous cancer patients both locally and internationally. Even so, she said that rejected patients have generally been very understanding and satisfied with the fact that an alternative treatment is being examined. However, frustration in such a situation is inevitable.

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DR EVANGELOS MICHELAKIS
DCA RESEARCHER

tion, but that's to be expected. Most of them want you to listen to their stories if nothing else," Webster said.

Despite limitations, cautious optimism is prevalent. There's evidence that DCA may be applicable to various forms of cancer, such as breast and lung. Therefore, if this trial produces successful results, similar protocols—such as Phase I—will be conducted on other forms of cancer and with different dosages or combinations of drugs.

Funding has been a problem for the DCA team, as pharmaceutical companies have been reluctant to support the research due to the fact that the drug can't be patented. But with such success, Michelakis hopes more cash will follow.

"Though we had this huge fundraising and support from the U of A, we need much more for the next step. We hope that if the trial shows something promising, then the fundraising will explode even more."

However, with the discovery of a promising treatment, some cancer patients have desperately turned to self-medication with DCA. Already, a Californian man has had portions of his website shut down after the American Food and Drug Administration (FDA) discovered that the man was selling DCA to patients. A clinic in Toronto is also currently selling DCA, leading Michelakis to believe that the Canadian system isn't reacting or responding appropriately to this violation of ethical conduct.

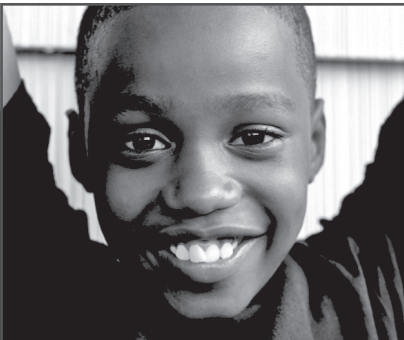
"People are targeting desperate and fragile people and making business off of them by selling the drugs. The providers are telling patients it's not their responsibility if the drug hurts them. Of course, if you are desperate, you're going to sign everything and pay as much as they ask you. They are selling it to make money, and that's tragic," he said.

According to Webster, there are major problems with the self-medication of DCA, including the fact that patients have no guarantee about the purity or even the identity of the drugs they're purchasing from unauthorized sources.

In addition, Michelakis and his research team don't have conclusive evidence about how effective the drug will be on human cancer cells: while DCA has been safely used in previous treatments with other diseases, the body of someone with cancer is very different than a normal one. DCA may also cause patients to experience unsteady vision and numbness in the fingers, and peripheral neuropathy and damage to the liver are other possible side-effects.

According to Michelakis, such problems are amplified by the fact that they're not under professional supervision.

"It doesn't make sense to self-medicate without knowing if it is working or if you are hurting yourself," Michelakis said.



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