Viagra has the potential to be used as a treatment for rare cancers

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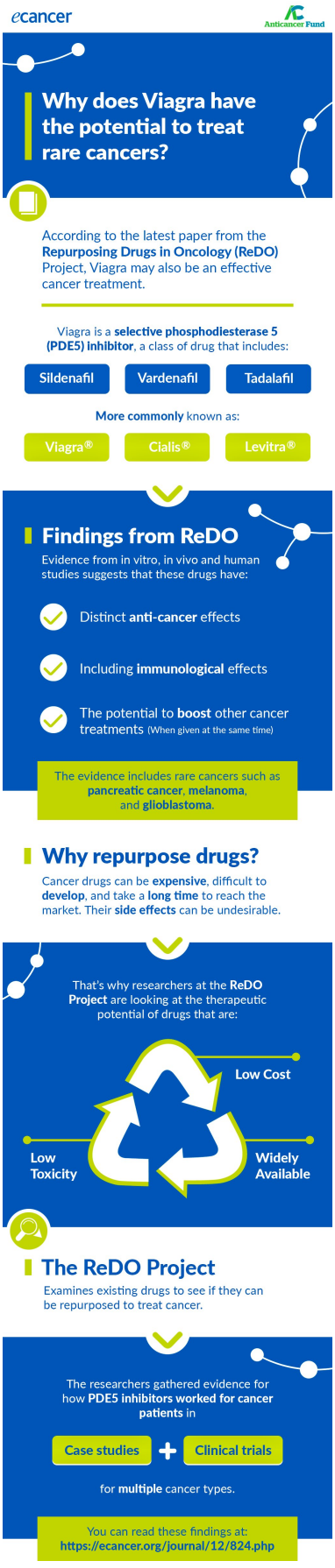
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Anticancer Fund
Why does Viagra have the potential to treat rare cancers?
According to the latest paper from the Repurposing Drugs in Oncology (ReDO) Project, Viagra may also be an effective cancer treatment.
Viagra is a selective phosphodiesterase 5 (PDE5) inhibitor, a class of drug that includes:
Sildenafil
Vardenafil
Tadalafil
More commonly known as:
Viagra®
Cialis®
Levitra®
Findings from ReDO
Evidence from in vitro, in vivo and human studies suggests that these drugs have:
Distinct anti-cancer effects
Including immunological effects
The potential to boost other cancer treatments (When given at the same time)
The evidence includes rare cancers such as pancreatic cancer, melanoma, and glioblastoma.
Why repurpose drugs?
Cancer drugs can be expensive, difficult to develop, and take a long time to reach the market. Their side effects can be undesirable.
That's why researchers at the ReDO Project are looking at the therapeutic potential of drugs that are:
Low Cost
Low Toxicity
Widely Available
The ReDO Project
Examines existing drugs to see if they can be repurposed to treat cancer.
The researchers gathered evidence for how PDE5 inhibitors worked for cancer patients in
Case studies
+
Clinical trials
for multiple cancer types.
You can read these findings at:
https://ecancer.org/journal/12/824.php

The class of drugs currently prescribed to treat male erectile dysfunction has been flagged for its potential to be included in new trials for anti-cancer drugs, in a new clinical study published today in the open-access journal, *ecancermedicalscience*.

The paper is the latest publication from the Repurposing Drugs in Oncology (ReDO) project, an international collaboration between the Anticancer Fund, Belgium, and USA-based GlobalCures. Credit: *ecancermedicalscience*

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With the high cost of new cancer drugs a huge political issue faced by governments across the world, the mission of the Anticancer Fund is to identify which commonly (and cheaply) available existing drugs have untapped life-saving potential.

In their paper, the researchers have identified that selective phosphodiesterase 5 (PDE5) inhibitors have the potential to be used in new drug trials. These PDE5 inhibitors are a class of drugs that include sildenafil, tadalafil and vardenafil (more commonly known by their brand names Viagra, Cialis and Levitra).

"In many respects sildenafil is the ultimate repurposing success story,"

says Dr. Pan Pantziarka of the Anticancer Fund. "It was originally developed for angina, repurposed for erectile dysfunction and then again for pulmonary arterial hypertension, and now it has the potential to be repurposed again as an anti-cancer drug."

Like many of the other drugs that the Repurposing Drugs in Oncology (ReDO) Project has profiled in publications in *ecancermedicalscience*, PDE5 inhibitors show a wide range of mechanisms of action in different cancer types, such as glioblastoma multiforme—a rare disease where clinically meaningful advances are desperately needed.

"Checkpoint inhibitors have radically altered the landscape in oncology, but there remain significant challenges in terms of increasing the number and duration of responses," Pantziarka explains.

"Emerging evidence, summarised in this paper, suggests that PDE5 inhibitors may be one mechanism for achieving this."

"It would be ironic if the key to improving outcomes from some of the most expensive drugs in oncology comes from repurposing some of the cheapest non-oncology drugs."

The paper also explores the issue that finding new agents able to cross the blood-brain-barrier is a challenge which severely limits the range of drugs available to treat brain tumours. There is some evidence that drugs not currently licenced for cancer treatment like the PDE5 inhibitors, are able to increase permeability so that drug delivery to brain tumours is improved—thereby potentially opening the door to new therapeutic options for patients.

The paper includes a broad range of data, pre-clinical and clinical, has been summarised and presented to make the case that these commercially available and widely used PDE5 inhibitors are very strong

candidates for repurposing as anticancer agents.

These low-cost, low-toxicity drugs show potential to be included with current and emerging standard of care treatments in oncology.

The researchers' hope is that this paper will bring the potential of this class of drugs to the attention of more clinicians and researchers engaged in clinical trials. A number of small, early phase trials are on-going, but the ReDO group believe that it is time for much larger efficacy trials to begin, so that the promise of these cheap repurposed medications can be fully realised.

Previous papers from the ReDO project have explored how inexpensive, common drugs such as beta-blockers and anti-fungal remedies can be "repurposed" and used as part of cancer treatments.

More information: Pan Pantziarka et al, Repurposing drugs in oncology (ReDO)—selective PDE5 inhibitors as, *ecancermedicalscience* (2018). DOI: 10.3332/ecancer.2018.824

Provided by ecancermedicalscience